

1080

No. 2918

United States 1080
Circuit Court of Appeals
For the Ninth Circuit.

Transcript of Record.
(IN THREE VOLUMES.)

UNION TOOL COMPANY,

Appellant,

vs.

ELIHU C. WILSON,

Appellee.

VOLUME III.
(Pages 801 to 1127, Inclusive.)

Upon Appeal from the United States District Court for
the Southern District of California,
Southern Division.

Filed

JAN 30 1917

F. D. Monckton,
Clerk.

United States
Circuit Court of Appeals
For the Ninth Circuit.

Transcript of Record.
(IN THREE VOLUMES.)

UNION TOOL COMPANY,
Appellant,
vs.
ELIHU C. WILSON,
Appellee.

VOLUME III.
(Pages 801 to 1127, Inclusive.)

Upon Appeal from the United States District Court for
the Southern District of California,
Southern Division.

(Deposition of Frederick W. Jones.)

XQ. 162. Did you ever discuss that catalogue with Mr. Edward Double or look it over with him?

Mr. LYON.—Objected to as incompetent, not cross-examination, irrelevant and immaterial, and having no bearing upon the issues of this case.

Mr. BLAKESLEE.—Without going into argument in violation of the rule, we wish merely to state that the witness has testified as inventor and as to the relation between his operations and acts and inventions and the production of certain types of reamers at the shop at Santa Paula in question, thereby laying the foundation for such cross-examination.

Mr. LYON.—The further objection is urged that the question of whether this witness or the said Edward Double did in fact invent anything whatever, is immaterial in this case, particularly as to whether said Edward Double invented anything, the material fact being that this witness caused to be made and [671] caused to be used and caused to be sold and offered for sale underreamers of the types illustrated by Defendant's Exhibits Fred W. Jones Reamers, Types 1 and 2. This suit does not involve any question as to whether such reamers so designed by this witness did amount to or did not amount to patentable invention at that date, and the witness has not been examined as to any such alleged Canadian or other reamers.

Mr. BLAKESLEE.—If the invention by the witness of any reamers—and I now refer the act of invention itself—is immaterial in this controversy, the

(Deposition of Frederick W. Jones.)

question asked the witness on direct examination as to his conception of one or both of the types of reamers offered in evidence in connection with the direct examination was immaterial. As such question or questions was or were asked, such examination that is now being conducted in cross-examination is certainly proper; and it is proper to test the memory of the witness as to the origin of these inventions inquired into in direct examination, and whether such origin was of the nature of sole or joint invention, and, if so, who was or were responsible for such origination.

Mr. LYON.—The witness is not claiming any patent or patent rights on either of the two types of Jones Reamers offered in Evidence, and no patent has ever been issued thereon.

Mr. BLAKESLEE.—However, the question of conception was gone into on direct examination.

A. Yes; more than once.

XQ. 163. (By Mr. BLAKESLEE.) Was that before any reamers were made by or for Mr. Double at that shop at Santa Paula?

Mr. LYON.—Objected to as irrelevant, immaterial and not cross-examination.

A. It was about that time.

XQ. 164. (By Mr. BLAKESLEE.) Are you able to say that it was not before any such reamers were made at that shop by or for [672] Mr. Edward Double? A. Yes; I think it was.

XQ. 165. It was before? A. Yes.

XQ. 166. And was the Swan reamer in the

(Deposition of Frederick W. Jones.)

shop at Santa Paula referred to before any such reamer was made for or by Edward Double, and did you discuss such Swan reamer with him at such time?

Mr. LYON.—The same objection.

A. Yes.

XQ. 167. (By Mr. BLAKESLEE.) Can you state briefly what such Swan reamer was like?

A. The main body had a tapering tongue, the small end down, and two cutters sliding on the tapering part, held in place with tongues and a rod operating on the inside of the body with a key in said cutters.

XQ. 168. Those tongues were in the nature of dovetails on the body, were they? A. Yes, sir.

XQ. 169. And there was a hollow-slotted part at the lower end of the body, faces of which inclined downwardly toward each other? A. Yes, sir.

Mr. LYON.—All questions in regard to such Swan reamer and its construction are objected to upon the ground that the same is not cross-examination, irrelevant and immaterial.

XQ. 170. (By Mr. BLAKESLEE.) And the cutters or bits slid up and down on this hollow-slotted extension with its confined faces, did they not?

A. Yes, sir.

XQ. 171. And they were pulled upwardly in expanding position by a spring-actuated rod which carried a key that [673] projected through this hollow-slotted extension and was engaged with the cutters? Is that not so? A. Yes.

XQ. 172. Did you understand that the cutters of the Canadian underreamer of the Oil Well Supply Company Catalogue of 1896 or '97 that you have told

(Deposition of Frederick W. Jones.)

about, tilted over the lower end of the body of that reamer?

Mr. LYON.—Objected to as incompetent, not the best evidence; irrelevant and immaterial in this case.

A. No.

XQ. 173. (By Mr. BLAKESLEE.) And they moved in and out, did they not, as they came down over the lower end of this body or were raised up in expanding?

Mr. LYON.—The same objection, and the objection will be understood as repeated to all questions asked the witness, without the necessity of further repeating the same.

A. Yes.

XQ. 174. (By Mr. BLAKESLEE.) And they swung in and out, didn't they, in doing that?

A. Yes, sir.

XQ. 175. In other words, they moved in a sort of a grooved path, did they not, similarly to the cutters of Defendant's Exhibit Fred W. Jones Reamer Type 1? A. More like No. 2.

XQ. 176. And they were not confined to a definite path for such movements just like they are in this type 1 underreamer in evidence? Is that not so?

A. No.

(The question is read by the examiner.)

A. I think it is.

XQ. 177. (By Mr. BLAKESLEE.) But in both that Canadian underreamer and type 1 reamer in evidence before us, the cutters [674] were caused to move inwardly as well as downwardly in contract-

(Deposition of Frederick W. Jones.)

ing, and outwardly as well as upwardly in expanding, were they not? A. Yes, sir.

XQ. 178. You have referred to certain features by the term of steps on the cutters of this Canadian underreamer. What were they like and what were they for?

A. Well, we don't always use the same term for the same thing. The step, I would say, would be the place where the foot of the cutters would rest while they were working.

XQ. 179. And those were projections inwardly, were they not, from the inner faces of the cutters that bore on the body of the reamer? A. Yes.

XQ. 180. And when these projections came down below the lower end of the body of the reamer, what happened?

A. They hooked around the step.

XQ. 181. And what occurred to the cutters at that time, or in what position did they come?

A. They were brought in so that they would pass down the casing.

XQ. 182. Brought into contracted positions?

A. Yes, sir.

XQ. 183. And then how were they drawn up into expanded working position when they got below the casing in the hole?

A. Well, practically the same as most all the reamers the way they are made to-day.

XQ. 184. By means of a spring-actuated rod and key or something of that sort? A. Yes, sir.

XQ. 185. And that same effect is produced in De-

(Deposition of Frederick W. Jones.)

defendant's Exhibit Fred W. Jones Reamer Type 1, is it not? A. Yes, sir. [675]

XQ. 186. And the cutters in contracting in this type No. 1 reamer before us moved downwardly and inwardly, and in expanding moved outwardly and upwardly, did they not? A. Yes, sir.

XQ. 187. And as a matter of fact, the cutters on this style No. 1 reamer before us do move in curved paths so that the cutters themselves tilt or turn inwardly or outwardly in contracting or expanding. Is that not correct? A. Yes, sir.

XQ. 188. And did you not discuss this reamer like the type 1 reamer in evidence before us, with Mr. Edward Double as referred to, before any reamers were made for him or by him?

Mr. LYON.—Objected to as not cross-examination and irrelevant and immaterial to the issues of this suit.

A. It is pretty hard for me to separate those things in my mind, as they were so near together at that time. I think that this exhibit No. 1—the invention was completed before or about the time that Mr. Double was making the first underreamer.

(The question is read by the examiner.)

A. No.

XQ. 189. (By Mr. BLAKESLEE.) I, of course, Mr. Jones, do not refer to this particular reamer lying on the floor before us, but I refer to any reamer of that kind, a model or anything else that you made. Did you not discuss that with Mr. Double before any reamers were made by or for him?

(Deposition of Frederick W. Jones.)

A. This model No. 1 I made myself individually. Mr. Double and me had discussed underreamers pretty thoroughly, and as between us I consider we were the originators of the idea of the original Double reamer.

Mr. LYON.—I move to strike the answer from the record and exclude it from consideration on each of the grounds stated in the objections thereto, and upon the further ground that it [676] is not responsive to the question, and I ask that the question be reread to and that he answer the same yes or no.

Mr. BLAKESLEE.—Read the question.

(Question is read.)

A. I think I answered that question, didn't I?

XQ. 190. (By Mr. BLAKESLEE.) Please answer it again so that the record may show clearly.

A. This model type 1 I invented exclusively myself, but me and Mr. Double discussed the underreamer problem pretty thoroughly at that time and I and Mr. Double were the originators of the original reamer that Mr. Double made at that time.

XQ. 191. Will you state a little further so that there may be a direct answer to the question, which both Mr. Lyon and myself want, whether you did not discuss with Mr. Double—and by that I mean talk about with him or show to him a model or something of the kind like this type 1 reamer before you on the floor—before any reamers were actually made by or for Mr. Edward Double?

A. Well, I think I did, but I can't say positively. As I said before, the connection is so close there that

(Deposition of Frederick W. Jones.)

I can't hardly separate them in my mind at the present time. But I know that at that time my mind and Mr. Double's too were pretty well wrapped up in the underreamer problem for several months, and I can't say whether this was before he got it up or after he got it up, but it was not afterwards, I am satisfied. It was along about the same time.

XQ. 192. And you discussed it with him about the same time? A. Yes, sir.

XQ. 193. You had a model, did you not, in wood, of an underreamer, like Defendant's Exhibit Fred W. Jones Reamer Type No. 1? A. Yes, sir. [677]

XQ. 194. Can you state when you made that wooden model?

A. It was some time in the spring of 1901, and I think it was in May. I am not certain, but it was either April or May.

XQ. 195. Did you show that model to Mr. Edward Double? A. Yes, sir.

XQ. 196. How soon after it was completed?

A. Well, just a few days.

XQ. 197. And you showed it to him at the shop of which he was foreman at Santa Paula, California?

A. Yes, sir.

XQ. 198. Do you know where that wooden model is today?

A. No, sir, that special model I can't say. It was a very small affair made so that I could put it in my pocket, and it was just to prove the idea. But I made the wooden models after that for full size reamers—several of them.

(Deposition of Frederick W. Jones.)

XQ. 199. Were they just the same as the small pocket model that you showed Mr. Double as you testified?

Mr. LYON.—Objected to as incompetent; no foundation laid for the introduction of secondary evidence, irrelevant and immaterial, which objection is understood as repeated to each question asked this witness in regard to this subject matter and the further objection is made that it is not cross-examination.

A. Yes, sir.

XQ. 200. (By Mr. BLAKESLEE.) I show you three photographs and ask you if you know what they show?

Mr. LYON.—Objected to as incompetent and not the best evidence, no foundation laid for the introduction of secondary evidence.

A. I recognize that as the model No. 1.

XQ. 201. (By Mr. BLAKESLEE.) When and where did you make the model of which these photographs were made?

Mr. LYON.—Objected to on the grounds heretofore stated on record and on the further ground that it is assuming a fact [678] not stated by the witness. The witness has not stated that this is a photograph of any particular thing, but simply a photograph like his model No. 1 reamer.

Mr. BLAKESLEE.—The last answer states that this is the reamer.

Mr. LYON.—The record speaks for itself.

A. At Santa Paula.

(Deposition of Frederick W. Jones.)

XQ. 202. (By Mr. BLAKESLEE.) When?

A. In the fall or summer and fall of 1901.

XQ. 203. It was after you made the first pocket model which you showed to Mr. Double?

A. Yes, sir.

XQ. 204. And how large was this reamer, approximately? A. $7\frac{5}{8}$ inches.

XQ. 205. Have you that pocket model in your possession or under your control to-day? A. No, sir.

XQ. 206. Do you know where it is.

A. I do not.

XQ. 207. When and where did you last see it?

A. You have got me stuck now. I don't know.

XQ. 208. Can you give some date and place which is the last in your recollection as to seeing this wooden model? A. I can't remember.

XQ. 209. Do you remember anything that Mr. Double said when you showed him the small pocket model like the wooden model of which these photographs were made?

Mr. LYON.—The same objection is noted, and that it is assuming facts not in accordance with the testimony of the witness nor with the facts in the case.

A. No.

XQ. 210. (By Mr. BLAKESLEE.) Do you remember anything you [679] said to him at that time?

Mr. LYON.—The same objection.

A. I cannot remember.

XQ. 211. (By Mr. BLAKESLEE.) The spring-actuated rod with the head on it for holding the cut-

(Deposition of Frederick W. Jones.)

ters of this type No. 1 reamer like the photograph we are discussing came, in a general way, from the Swan reamer, did they not? A. I think not.

XQ. 212. What particular difference was there?

A. This head rests below the cutters and the Swan had a key.

XQ. 213. But both had the spring-actuated rod?

A. Yes.

XQ. 214. Yet the spring-actuated rod in the Swan did not cause the cutters to tilt as they were expanded, whereas in the model like that shown in the photographs and the earlier pocket model of the spring of 1901, the cutters with the spring are moved in and inward and outward path, were they not?

A. I don't quite get you there.

(Question is read by the examiner.)

A. Yes.

XQ. 215. Referring again to these three photographs and comparing them with Defendant's Exhibit Fred W. Jones Reamer Type 1, do you find any differences in the construction and arrangement and purpose or action of the parts?

A. Different from the original?

XQ. 216. Comparing with that one on the floor.
(The question is read by the examiner.)

A. Nothing only the square on the lower end of the rod.

XQ. 217. The mode of operation would be the same? A. Yes, sir.

XQ. 218. And the square on the lower end of the rod would not make any difference in that?

(Deposition of Frederick W. Jones.)

A. It would keep the rod from turning and getting out [680] of place.

XQ. 219. And these photographs show, do they, just what was the construction and arrangement and operation of the parts in the little pocket model which you showed to Edward Double, as testified, in the spring of 1901? A. Yes, sir.

XQ. 220. And that was as early as April or May, 1901? A. Yes, sir.

Mr. BLAKESLEE.—Complainant offers in evidence the three photographs just discussed with the witness, in one group, as complainant's exhibit on cross-examination of witness Fred W. J. Jones, photographs of Jones model of Defendant's Exhibit Fred W. Jones Reamer Type 1.

Mr. LYON.—Objected to as not cross-examination, incompetent, irrelevant and immaterial.

(The said three photographs are together marked "Complainant's Exhibit on cross-examination of witness Fred W. Jones, Photographs of Jones Model of Defendant's Exhibit Fred W. Jones Reamer Type 1.")

XQ. 221. (By Mr. BLAKESLEE.) I notice, Mr. Jones, that Defendant's Exhibit Fred W. Jones Reamer *Tyle* 1 has certain shoulders of the curved dovetails at the lower end of the body, against which the upper ends of the cutters come when expanded, and that those shoulders are inclined downwardly and outwardly. Was that feature your invention?

A. Yes, sir.

XQ. 222. And did you show it with the first wooden

(Deposition of Frederick W. Jones.)

model to Edward Double? A. Yes.

XQ. 223. Did you ever meet a man named Jacob S. Brown, a well driller? A. No, sir. [681]

XQ. 224. Did you ever see a reamer known as the Brown reamer?

Mr. LYON.—Objected to as not cross-examination.

A. Yes.

XQ. 225. (By Mr. BLAKESLEE.) Where did you first see them?

Mr. LYON.—The same objections and all questions asked in relation to any such Brown reamer are objected to on the same ground.

A. At Santa Paula.

XQ. 226. (By Mr. BLAKESLEE.) And when?

A. I cannot positively give the date, but it was somewheres in the spring or summer of 1901.

XQ. 227. Was that before the first reamer was made for or by Mr. Edward Double?

Mr. LYON.—Objected to as indefinite and calling for a conclusion and not for a statement of fact, and upon each of the grounds stated in the objections to the other questions.

A. Yes. That was really the commencement of the underreamer career?

XQ. 228. (By Mr. BLAKESLEE.) What was that reamer like?

Mr. LYON.—The same objections, and the further objection that it is incompetent, not the best evidence, and no foundation laid for the introduction of secondary evidence.

(Deposition of Frederick W. Jones.)

A. It was made with two cutters operating on a rod and spring on the inside of the reamer, with a plate on the one side which was bolted to the body. That is as far as I can remember at the present time. The details I do not just remember.

XQ. 229. (By Mr. BLAKESLEE.) Do you remember what made the cutters expand and contract in that reamer, or what they worked over?

Mr. LYON.—The same objection. [682]

A. They worked over a block which was then a part of the body.

XQ. 230. (By Mr. BLAKESLEE.) Did they have shoulders or inward projections on the inner side? A. Yes, sir.

XQ. 231. And did the cutters tilt in expanding and contracting?

Mr. LYON.—The same objection, which will be understood as repeated as to each question asked about the same subject matter, without the necessity of hereafter repeating it on the record.

A. Yes.

XQ. 232. In other words, they swung from their tops, did they not, moving downwardly and inwardly in contracting, and moving outwardly and upwardly in expanding? A. Yes, sir.

XQ. 233. Do you know whether Edward Double saw that Brown underreamer before the first reamer was made by or for him?

Mr. LYON.—The same objection, and that it is not cross-examination.

A. Yes, sir.

(Deposition of Frederick W. Jones.)

XQ. 234. (By Mr. BLAKESLEE.) Did you discuss that Brown reamer with him at that time?

Mr. LYON.—The same objection.

A. Yes. A man by the name of Gilson brought the model to Santa Paula and it was in the office, and I was invited by Mr. Double to come and look at it. That was my first introduction to that reamer.

XQ. 235. (By Mr. BLAKESLEE.) The cutters of that reamer tilted or swung in expanding or contracting in the same way that the cutters of the Canadian reamers did, didn't they?

Mr. LYON.—The same objection. [683]

A. Yes, sir, similarly.

XQ. 236. (By Mr. BLAKESLEE.) Where did Mr. Double send you when he sent you to see this Brown reamer?

Mr. LYON.—The same objection, and that it is assuming facts not testified to by the witness.

A. He invited me into the office—the Union Tool Company's office.

XQ. 237. (By Mr. BLAKESLEE.) At Santa Paula? A. Yes, sir.

XQ. 238. You mean the Union Oil Tool Company. A. The Union Oil Tool Company.

XQ. 239. And what was said and done then and there?

Mr. LYON.—The same objection.

A. As to the details of the conversation, I couldn't say; but one thing was talked over and that was how we could make it, and he and I decided that it was

(Deposition of Frederick W. Jones.)

impossible to build that underreamer the way it was so made at that time.

XQ. 240. (By Mr. BLAKESLEE.) And that was before the first reamer was made for or by Mr. Edward Double? A. Yes, sir.

XQ. 241. Prior to that time had Mr. Double to your knowledge worked up in any way any underreamer which he afterwards made?

Mr. LYON.—Objected to as irrelevant, immaterial and not cross-examination.

Mr. BLAKESLEE.—The witness has testified to the origination of certain reamers by him and also as to his relations with the shop at Santa Paula of the Union Oil Tool Company and with Mr. Edward Double, and at his shop as foreman of that shop, and it is certainly cross-examination to go into the matters pertaining to the genesis of the reamers which the witness has testified that he originated and developed and afterwards sold. [684]

Mr. LYON.—The question of priority of invention between this witness and Edward Double, or the question of whether Edward Double was an original inventor, is not in issue in this case.

Mr. BLAKESLEE.—The record speaks for itself.

(The examiner reads the question to the witness.)

A. Not to my knowledge.

XQ. 242. (By Mr. BLAKESLEE.) Were you familiar with all the work that was being done at the shop at Santa Paula at that time?

A. Yes; I was.

(Deposition of Frederick W. Jones.)

XQ. 243. How frequently did you see Mr. Edward Double during the first half year of 1901?

Mr. LYON.—The same objections are repeated to all these questions in regard to any conversations with Mr. Edward Double by this witness, or any of his acts or doings in connection with Mr. Double, save and except as they refer to the production of the said Jones reamers, and without the necessity of hereafter repeating the same.

A. I was working in the shop and he was there most all the time, and we used to talk about such things very frequently—more so with me than any other one there—as I had been in charge prior to him.

XQ. 244. (By Mr. BLAKESLEE.) And had Mr. Edward Double to your knowledge worked out any underreamer which was afterwards made by or for him prior to the time that you discussed with him at the Santa Paula shop the Swan underreamer and the Canadian underreamer?

A. Not to my knowledge.

XQ. 245. And is that also true, referring to the wooden pocket model and the time you first discussed the same with Mr. Edward Double, and I mean the wooden pocket model of the underreamer like Defendant's Exhibit Fred W. Jones Reamer Type No. 1. [685] A. Yes.

XQ. 246. I show you a copy of United States patent No. 809,570 issued to one F. W. Jones, January 9, 1906, for underreamers, and ask you if you are

(Deposition of Frederick W. Jones.)

the Frederick W. Jones who applied for and obtained this patent?

Mr. LYON.—Objected to as not cross-examination, irrelevant and immaterial to the issues of this suit and to the matter involved herein.

A. Yes, sir.

XQ. 247. (By Mr. BLAKESLEE.) How did you come to assign this patent to Edward Double and Edward North at Los Angeles, California?

Mr. LYON.—Objected to as irrelevant and immaterial, and notice is given that application will be made for the imposition of costs of the taking of this portion of the deposition of this witness, such imposition to be upon the complainant, on the ground that all rules of evidence are violated by going into this matter, it not being in the remotest degree relevant or material to any issues in this case, or cross-examination.

Mr. BLAKESLEE.—The direct examination has dealt specifically with the present witness as an originator of underreamers, and questions have been asked as to the conception of underreamers, and we are testing the memory of the witness in these respects and also developing his activities in these respects.

A. Is it necessary that I should go into details about this?

Mr. BLAKESLEE.—Oh, briefly. Just as much as you want.

A. I was making this reamer while employed by

(Deposition of Frederick W. Jones.)

the California Tool Works at Santa Paula, and I received a notice from the Union Oil Tool Company of Los Angeles not to manufacture any more of these reamers as it was an infringement of the patent which they controlled, and so I assigned the whole business over to them as a consequence. [686]

XQ. 248. Was that other patent a patent to Edward North?

A. I did not do business with Mr. North; I done it with Frederick S. Lyon.

XQ. 249. And he represented the Union Oil Tool Company or Union Tool Company of which Mr. Edward Double whom we have referred to was president? A. Yes, sir.

Mr. BLAKESLEE.—Complainant offers in evidence copy of Jones patent just referred to, as “Complainant’s Exhibit on Cross-examination of Fred W. Jones, copy of Jones U. S. Patent 809,570,” and ask that the same be so marked.

Mr. LYON.—Objected to as not cross-examination, irrelevant, and immaterial to any of the issues of this suit, and needlessly incumbering the record.

(The said patent so offered in evidence is marked “Complainant’s Exhibit on Cross-examination of Fred W. Jones, Copy of Jones U. S. Patent 809,570,” together with the title of the court and cause and the date upon which the said exhibit was offered in evidence.)

XQ. 250. (By Mr. BLAKESLEE.) I show you a copy of U. S. Patent No. 796,197 issued to Edward Double, August 1st, 1905, for underreamer, and ask

(Deposition of Frederick W. Jones.)

you if you know anything about what is shown therein?

Mr. LYON.—Objected to as incompetent, no foundation laid, not cross-examination.

A. I recognize that as an underreamer that was manufactured at Santa Paula by Mr. Double or for him.

XQ. 251. (By Mr. BLAKESLEE.) Were you there when it was first manufactured?

A. I don't know whether I was there when it was first completed or not.

XQ. 252. Did you suggest to Mr. Edward Double any of the features shown in this patent? [687]

Mr. LYON.—Objected to as immaterial and not cross-examination.

A. It is hard for me to remember all the details as to the invention of this reamer; and as to stating the single parts that I assisted or originated in building this or inventing it, I cannot remember.

XQ. 253. (By Mr. BLAKESLEE.) I call your attention to the part marked 10 in this patent and the pin 22 that goes through it and holds it in place, and ask you if you had anything to do with devising and suggesting to Mr. Double that feature?

A. That part of the reamer I do remember. We had quite a discussion on it as in the Brown model that part of it was part of the body and it was impossible to work in behind that block and leave it solid to the body. I advised Mr. Double to put in a block with a pin sufficiently strong to stand the strain.

(Deposition of Frederick W. Jones.)

XQ. 254. And you suggested to him putting in that block?

A. To the best of my knowledge I did.

XQ. 255. Is that the best of your recollection?

A. Yes, sir.

XQ. 256. And was that the first reamer to your recollection that was made by or for Mr. Double at the Santa Paula shop??

A. I am not sure of that part of it, as I think there was another one made that was finally discarded entirely. But it was made previous to this, I believe, if I remember right.

XQ. 257. Did you suggest other features of this device shown in this patent No. 796,197, to Mr. Double?

A. Well, there isn't any doubt but what we discussed the thing pretty thoroughly, but to go into the details and mention the things, I cannot do it. My memory is not clear enough on the subject at this date to take it in.

XQ. 258. Do you remember any portion of the device shown in this patent No. 796,197 which Mr. Edward Double suggested? [688]

A. Well, now, that I couldn't say. As I said before, the thing was pretty well threshed out both ways by both of us, and what particular part each one advanced I am not able to say. I remember all the conversation we had at the time in regard to underreamers, or about that time at least. Mr. Double tried to get the exclusive right to manufac-

(Deposition of Frederick W. Jones.)

ture the Swan underreamer, as we had found out that the underreamer was going to be quite an extensive business, and he got in touch with the Swan, and he found that the Lydecker people were making the Swan reamer for Mr. Swan. And then we discussed the thing and we decided that we had to get up some kind of an underreamer to build up the business, as it was very essential at that time for the oil well business.

XQ. 259. You are not able, however, are you, to pick out any feature of this device as shown in U. S. Patent No. 796,197 which Mr. Edward Double suggested?

A. No; I cannot be sure. It is a long time since I had my mind on that.

XQ. 260. The idea of expanding the cutters of the reamer of this patent over the block by means of shoulders 17 on the cutters, irrespective of the mounting of the block 10, so that it could be removed, was borrowed from the Brown reamer you have referred to and from the Canadian reamer you have referred to, wasn't it?

Mr. LYON.—The same objection as noted to the questions asked the witness with reference to such Canadian and Brown devices, and as irrelevant and immaterial, the material fact being that that existed prior to any alleged conception of the invention by the complainant, of any part of the device *if* the patent in suit.

A. Yes; I believe it was.

(Deposition of Frederick W. Jones.)

XQ. 261. (By Mr. BLAKESLEE.) And the hollow-slotted extension of this reamer of this patent, in which this spring-actuated [689] rod that held the cutters, together with the key 8, was borrowed from the Swan reamer that you have referred to, was it not?

Mr. LYON.—The same objection. It is not cross-examination. The question of the validity of the Double patent No. 796,197 is not involved in this case. It is a printed publication as of its date and competent in evidence as such printed publication as well as being competent in evidence as a patent.

A. I could not say.

XQ. 262. (By Mr. BLAKESLEE.) The same action takes place, does it not, with the spring-actuated rod and key in pulling the cutters up and lowering them?

Mr. LYON.—The same objection.

A. Yes, sir.

XQ. 263. (By Mr. BLAKESLEE.) And the same sort of a tilt of the cutters takes place as took place in the Canadian reamer to which you have referred? Is that not so?

Mr. LYON.—The same objection.

A. Very similar.

Mr. BLAKESLEE.—The record in this case will show that the patent just referred to and discussed with the witness is the same as Defendant's Exhibit Double Patent No. 3.

XQ. 264. I now show you Defendant's Exhibit

(Deposition of Frederick W. Jones.)

Swan Patent and ask you if the drawings of the same correspond with the Swan reamer to which you have referred in your testimony?

Mr. LYON.—The question is objected to as incompetent, no foundation laid, the witness not having qualified to answer the question, and not cross-examination and as incompetent and not the best evidence, calling for a conclusion of the witness, and not for a statement of facts, no foundation laid for the introduction of secondary evidence.

A. I recognize this as a Swan underreamer that I have had to do with or been in connection with.
[690]

XQ. 265. (By Mr. BLAKESLEE.) And the one you have testified about before? A. Yes.

XQ. 266. Are you accustomed to reading working drawings, shop drawings and other drawings, and have you been so accustomed in your shop work?

A. Yes, sir; I studied mechanical drawing.

XQ. 267. I now show you Defendant's Exhibit Double Patent No. 1 and ask you if you ever saw an underreamer substantially like that shown in the drawings of this patent?

Mr. LYON.—Objected to as not cross-examination and as incompetent, no foundation laid, the witness not having qualified to answer the question.

A. I recognize that as the reamer that Mr. Double manufactured.

XQ. 268. (By Mr. BLAKESLEE.) You mean the same Edward Double to whom we have referred?

A. Yes, sir.

(Deposition of Frederick W. Jones.)

XQ. 269. Did you have anything to do with the devising or getting up this reamer?

Mr. LYON.—Objected to as not cross-examination, irrelevant and immaterial to the issues of this case.

A. I cannot remember that I did.

XQ. 270. (By Mr. BLAKESLEE.) Was this gotten up before or after the underreamer of Double Patent No. 3 which you have just discussed?

Mr. LYON.—Objected to as incompetent, the witness not having qualified to answer the question, and calling for a mere conclusion of the witness.

A. To the best of my knowledge this reamer was made first.

XQ. 271. (By Mr. BLAKESLEE.) You mean the reamer of Double Patent No. 3? [691]

A. Yes; to the best of my knowledge it was made first. I may be mistaken.

XQ. 272. Prior to any time that Mr. Edward Double worked upon the reamer shown in the drawings of Defendant's Exhibit Double Patent No. 1, as far as your knowledge goes, did you discuss such reamer and this patent No. 1 with Mr. Edward Double?

Mr. LYON.—Objected to as incompetent, irrelevant and immaterial to the issues of this case, and not cross-examination.

A. I do not remember.

XQ. (273. (By Mr. BLAKESLEE.) And do you remember discussing this reamer of Defendant's Exhibit Double Patent No. 1 with Mr. Edward

(Deposition of Frederick W. Jones.)

Double at Santa Paula before any such reamers were made by or for him?

Mr. LYON.—The same objection.

A. I cannot say at the present time.

XQ. 274. (By Mr. BLAKESLEE.) The shoulders 18 of this patent No. 1 follow the shoulders of the Brown reamer you have referred to and also of the Canadian reamer you have referred to, do they not?

Mr. LYON.—Objected to as not cross-examination and as incompetent and not the best evidence, calling for the conclusion of the witness, no foundation laid for secondary evidence, irrelevant and immaterial to to the issues of this suit, whether or not Edward Double was the originator or first inventor of the subject matter of Defendant's Exhibit Double Patent No. 1 not being in issue.

XQ. 275. (By Mr. BLAKESLEE.) Prior to the time any underreamer was made by or for Mr. Edward Double to your knowledge having a hollow-slotted extension at the bottom of the reamer like that shown in Defendant's Exhibit Double Patent No. 1 and Double Patent No. 3, or tilting cutters like those shown in those Double patents, or shoulders on the inner faces of the [692] cutters like those shown in those patents, you had discussed such underreamer features with Mr. Edward Double at Santa Paula, California, had you not?

Mr. LYON.—The same objection.

A. Yes.

(Deposition of Frederick W. Jones.)

XQ. 276. (By Mr. BLAKESLEE.) And the block 10 of Defendant's Exhibit Double Patent No. 3, which you say you suggested to Mr. Double, was to do the same work, as far as helping in the expansion and contraction of the cutters, as the solid part 6 at the lower end of the body of the reamer of Defendant's Exhibit Double Patent No. 1, was it not?

Mr. LYON.—The same objection.

A. Yes, sir.

XQ. 277. (By Mr. BLAKESLEE.) Referring now to Defendant's Exhibit Double Patent No. 2, I call your attention to the lugs 10 shown in the drawings and ask you if you know anything about the providing of those upon the cutters of the reamer?

Mr. LYON.—The same objection.

A. I don't remember anything about that feature of it.

XQ. 278. (By Mr. BLAKESLEE.) Did you discuss this underreamer as shown in this Defendant's Exhibit Double Patent No. 2 with Mr. Double before any such reamers were made by or for him?

Mr. LYON.—The same objection.

A. I do not remember that I did.

XQ. 279. (By Mr. BLAKESLEE.) Can you mention now any feature of Defendant's Exhibits Double Patent No. 1 and Double Patent No. 2 and Double Patent No. 3 which were suggested to you first by Mr. Edward Double?

Mr. LYON.—The same objection.

A. I cannot call them to mind at this time.

(Deposition of Frederick W. Jones.)

XQ. 280. (By Mr. BLAKESLEE.) Do you remember that he made definite suggestions of any such parts to you? [693]

Mr. LYON.—The same objection.

A. It is beyond my recollection.

XQ. 281. (By Mr. BLAKESLEE.) Did anybody else in the shop at Santa Paula to which we have referred produce or suggest any underreamer features like those which were afterwards embodied in the underreamers made by or for Edward Double, and I mean anybody else besides yourself and Mr. Edward Double?

Mr. LYON.—The same objection..

A. To the best of my knowledge there was not.

XQ. 282. (By Mr. BLAKESLEE.) And you feel quite sure, do you, that the underreamer like Defendant's Exhibit Double Patent No. 3 or as shown in the drawings thereof was worked up before the underreamer like that shown in the drawings of Defendant's Exhibit Double Patent No. 1?

Mr. LYON.—Objected to as not cross-examination, irrelevant and immaterial to the issues of this suit, and as having been previously answered by the witness.

A. I don't quite get that.

(Question read by the examiner.)

A. To the best of my knowledge it was. I may be wrong on that.

XQ. 283. (By Mr. BLAKESLEE.) And to the best of your recollection the invention of this

(Deposition of Frederick W. Jones.)

Double Patent No. 3 antedated or was prior to the invention of Double Patent No. 1?

Mr. LYON.—The same objection.

A. Yes.

XQ. 284. (By Mr. BLAKESLEE.) To the best of your knowledge and recollection were you at least a part inventor of the underreamer of Double Patent No. 3?

Mr. LYON.—Objected to on all the grounds stated heretofore and calling for a mere conclusion of the witness.

A. Well, I consider that I was. [694]

XQ. 285. (By Mr. BLAKESLEE.) Was any suggestion made to you by Mr. Double that you join him in applying for the letters patent for Defendant's Exhibit Double Patent No. 3 or Defendant's Exhibit Double Patent No. 1?

Mr. LYON.—The same objection.

A. No; I never knew there was a patent being applied for.

XQ. 286. (By Mr. BLAKESLEE.) Has Mr. Edward Double or anyone representing him ever paid you or offered you any money or other consideration of any kind further than what you received in compensation for your services in the shop, and I mean as a workman in the shop, at Santa Paula?

A. No, sir. You had better change that, because that is going to get balled up in this other reamer. I might state the amount I got for that Jones patent to which you have called my attention. It was \$150.

XQ. 287. The only other money you received was

(Deposition of Frederick W. Jones.)

\$150 or thereabouts, altogether, for assigning to Mr. Double and Mr. North Jones Patent No. 809,570?

A. Yes.

XQ. 288. Now, in working up and devising the underreamers which finally were made by or for Edward Double in the shop at Santa Paula, California, you in discussing these matters with Edward Double, referred, did you not, frequently and from time to time to the pocket model like Defendant's Exhibit Fred W. Jones Reamer Type 1, to the Oil Well Supply Company Catalogue of 1896 or '7 showing the Canadian Reamer to the Brown underreamer and to the Swan underreamer?

Mr. LYON.—Objected to as not cross-examination, irrelevant and immaterial to the issues of this suit, incompetent, calling for a conclusion of the witness and not the best evidence, and as assuming facts not in accordance with the record in the case or the evidence, and as assuming facts not appearing from the [695] record.

A. At that time we discussed most all of the makes of underreamers there was in existence.

XQ. 289. (By Mr. BLAKESLEE.) And did you not discuss the ones that I have referred to in my question?

Mr. LYON.—The same objection.

A. Yes.

XQ. 290. (By Mr. BLAKESLEE.) And Mr. Double told you, did he not, at that time, that it was necessary for you and him to work out an under-

(Deposition of Frederick W. Jones.)

reamer which would successfully compete with the Swan underreamer?

Mr. LYON.—The same objection.

A. I don't know that he put it just that way, but he said it was very necessary that we should have or get up a good underreamer for to bring business.

XQ. 291. (By Mr. BLAKESLEE.) And he did not have a good one that he could make in the shop himself at that time, did he?

Mr. LYON.—The same objection.

A. No.

XQ. 292. (By Mr. BLAKESLEE.) Is it not true that recently, before testifying in this case, that you had a talk with somebody representing Edward Double and the Union Tool Company and that they said they would like to buy up your rights or claims, such as they might be, in connection with the Double underreamers? A. No, sir.

XQ. 293. What was said in that connection?

A. There wasn't anything mentioned in regard to paying anything.

(The hour of 12:30 having arrived, an adjournment is now taken by consent until 1:30 P. M., at the same place.) [696]

Saturday, August 14, 1915. 1:30 P. M.

This being the time and place to which the further taking of the deposition of Frederick W. Jones was by consent continued, proceedings are now resumed and the cross-examination of Frederick W. Jones is resumed.

(By Mr. BLAKESLEE.)

XQ. 294. You had a talk with Mr. Frederick S.

(Deposition of Frederick W. Jones.)

Lyon, present here, attorney for the defendant in this case, prior to giving your present testimony, did you not? A. Yes.

XQ. 295. What did you discuss with him?

A. Well, he stated the facts of the case; that there was a—I suppose you would call it a suit, would you not?—between Mr. Wilson and the Union Oil Tool Company, and that he knew from past experience that I *knowed* a great deal about the underreamer business and its origination here in California, and he came to me for some information which he had positive proof that I could furnish. He knew that I had invented some underreamers and he wanted for me to kind of state as to the dates when these different makes of underreamers were manufactured, and also when they were invented. I think that was about the sum and substance of the conversation as to the underreamer business. Wasn't that about all, Mr. Lyon?

Mr. BLAKESLEE.—Mr. Lyon is not testifying now, so you will have to wait for his deposition till later.

Mr. LYON.—I cannot answer you now.

XQ. 296. (By Mr. BLAKESLEE.) You have not anything further to state? A. No.

XQ. 297. Can you state when the first underreamer like Defendant's Exhibit Fred W. Jones Reamer Type No. 1 was sold?

A. I could not state the exact date, but it was somewhere [697] along about August or September, of 1901.

(Deposition of Frederick W. Jones.)

XQ. 298. And do you know where it was used?

A. Well, they were used in different places, but the first one I think was used in what they call the West-lake Oil Company in Los Angeles.

XQ. 299. Do you know when this type No. 1 reamer—the very one before us—was made?

A. Well, I don't know the exact date, but it was somewhere between May and the time it was sold, I believe, if I remember right.

XQ. 300. What year? A. 1901.

XQ. 301. This very one before us?

A. Yes, sir. This one.

XQ. 302. Do you know where it has been since that time?

A. No; I could not tell. The first time I seen it was yesterday.

XQ. 303. Do you know by whom and where that particular reamer was made?

A. All of this type of reamers that were made were made by myself at Santa Paula.

XQ. 304. At the shop of the Union Oil Tool Company?

A. No; it was made by Skinner and me at the Santa Paula Tool Works. We were partners.

XQ. 305. But you did not leave them until June or July, 1901, I believe you have testified—you did not leave the Union Tool Company?

A. Yes; I left them in the spring. I don't exactly remember the date, but it was somewhere between May or June or somewhere along there.

(Deposition of Frederick W. Jones.)

XQ. 306. That is, you left them sometime in May or June?

A. Yes; as I say, I am not positive as to the date.
[698]

XQ. 307. Why was it you did not continue to make and sell reamers like that Type 1?

A. Well, I got up this reamer No. 2 and I thought it was much better, and therefore, I discontinued the manufacture of the No. 1.

XQ. 308. Was Edward Double or was the Union Oil Tool Company selling any underreamers made by or for Edward Double when you discontinued making reamers like the type No. 1 exhibit?

A. I believe they were, to the best of my knowledge.

XQ. 309. Do you know to what extent?

A. No, I do not. It was certainly not to any great extent, because the underreamers business then was in its infancy.

XQ. 310. Swan reamers had been used for some time and Austrians, before that, hadn't they?

A. Yes, sir.

XQ. 311. When you stated that "we made several reamers" like type No. 2, and that you shipped several to Florence, Colorado, do you mean you and Mr. Skinner? A. Yes, sir.

Q. 312. What do you know about the working of this type No. 2 reamer of which you say you sold several? Do you know that it worked satisfactorily?

A. Well, it did in one sense of the word, and then it didn't, in another. Of course, I never used the

(Deposition of Frederick W. Jones.)

reamers and I cannot speak from actual experience. I had to take the say-so of the men that handled the reamers and the people that sold them. The reamers that were used here, I think with the exception of one, gave fairly good satisfaction.

XQ. 313. Were you ever present when one was run into the oil well hole or withdrawn from the hole?

A. No; I never was. [699]

XQ. 314. Then you don't know anything as to the success of the operation of these type 2 reamers with the exception of what was told you?

A. That is all.

XQ. 315. Didn't you hear, as a matter of fact, that in some instances they did not work well?

A. Yes, sir, we did, I suppose, like most all reamers. There is some that don't give satisfaction and sometimes they do.

XQ. 316. And some of these cutters like those of type 2 broke, didn't they? A. Yes, sir.

XQ. 317. Why did you discontinue selling reamers like this type 2 reamer?

A. One reason was that we agreed to disagree and go out of business, and we had to come in competition with other reamers that were being put on the market at that time which were being sold for less money.

XQ. 318. And before long the reamers made by or for Edward Double came into competition with this type 2 reamer? A. Yes, sir.

XQ. 319. Now, was there not trouble in getting this type 2 reamer into the casing?

(Deposition of Frederick W. Jones.)

A. Not to my knowledge. There might have been.

XQ. 320. Did you hear of such trouble?

A. No; I don't remember. I know they had trouble getting them out when they got them in, sometimes.

XQ. 321. Do you know why that was?

A. No; I can't say.

XQ. 322. And these type 2 reamers were made during part of 1901 and 1902 by you and Mr. Skinner at Santa Paula? A. Yes, sir.

XQ. 323. And not after that year?

A. No; not after 1902. [700]

XQ. 324. How many all together were made approximately?

A. Well, I couldn't say, but I should judge maybe there might have been ten or a dozen.

XQ. 325. That is, of type 2? A. Yes.

XQ. 326. And of these how many were sold?

A. They were all sold, or, at least, we got the pay for them.

XQ. 327. And were some of them returned?

A. No.

XQ. 328. Were any rebates asked for any of them?

A. No; I had two for my own individual use, and I used to keep them at Santa Paula there to rent out to different parties. That was the $95\frac{5}{8}$ and $75\frac{5}{8}$.

XQ. 329. When was it that you went to the Los Angeles Tool Works to have parts for these reamers made?

A. It was some time in 1901, along in the fall, I

(Deposition of Frederick W. Jones.)

believe, or winter. I don't remember just what date.

XQ. 330. Those parts were shipped up to Santa Paula to be assembled by you and Mr. Skinner?

A. Yes, sir.

XQ. 331. And it was then that you saw Ed. Mills or Mr. Close? A. Yes, sir.

Mr. BLAKESLEE.—That is all.

Redirect Examination.

(By Mr. LYON.)

RDQ. 332. You have been asked some questions with reference to a conversation which you had with me prior to going on the stand. That conversation was held at your ranch at McFarland on Tuesday, August 3d, 1915, and in the presence of your wife and Mr. B. N. Yonkin, was it? [701]

A. I guess so; yes.

RDQ. 333. That was the time and place?

A. Yes.

RDQ. 334. How long had you known me prior to that time?

A. I think the first time that I have got acquainted with you was at the Mills hearing.

RDQ. 335. That was when you gave testimony in the interference proceeding between an application of Edward E. Mills for a patent on an underreamer—on what is known as the National or Mills Underreamer,—and the application of Edward Double, Serial No. 135,792, December 18, 1902, referred to as Defendant's Exhibit Double Patent No. 3?

A. Yes.

RDQ. 336. And at that time you knew that Mr.

(Deposition of Frederick W. Jones.)

Double had pending an application for letters patent upon that underreamer and claimed to be the inventor thereof, did you?

A. I believe so. I am not positive about it—whether I knew it at that time or not.

RDQ. 337. And you gave testimony in that case on behalf of Mr. Mills, did you? A. Yes.

RDQ. 338. And that testimony was given on August 10, 1903, at Los Angeles, California?

A. Wasn't some of that testimony given at Santa Paula?

RDQ. 339. Not by you. I show you the record.

A. Well, it was given in Los Angeles, if it was not at Santa Paula. I remember giving it, but I forget just where.

(The witness looks at the record in said interference.) Yes.

RDQ. 340. At that time you made no claim to being the inventor of the subject matter of such interference, did you?

Mr. BLAKESLEE.—Objected to as calling for an interpretation [702] testimony of the witness and not the best evidence. The record speaks for itself.

A. I think not.

RDQ. 341. (By Mr. LYON.) I show you a transcript of your testimony and call your attention to question 10 which is as follows: "Did you have a conversation with Mr. Double in reference to this reamer, and if so, state the conversation," such reamer being the reamer shown and described in Defendant's Exhibit Double Patent No. 3, and your an-

(Deposition of Frederick W. Jones.)

swer was as follows: "While I was employed by Mr. Double, at the same time he was manufacturing this reamer in question. I had a conversation with him, and he said the reamer was a mean thing to manufacture; that he would change the construction of it, and he showed me what changes he proposed to make, and he also asked me what I thought of the change, and I told him I thought the change was a good one; that is all." Then question 11: "Where was this conversation? A. At Santa Paula, in his office. I think it was along about the last of June or first of July. I can't state the date exactly. 1901." Those are the questions asked you and you gave that testimony, did you?

A. I think that is correct, to the best of my memory.

RDQ. And that testimony was true and correct, was it? A. I think it was.

RDQ. 343. To question 15 of said deposition you stated that you left the employ of Mr. Double along about the 15th day of July, 1901, did you?

A. I expect that *it* right, because that was fresher in my memory than it is now.

RDQ. 344. On cross-examination in that same deposition you were asked the following question: "You were manufacturing an underreamer in September and October, 1902, were you not"? And your answer was, "Yes, sir," and XQ. 9. "You had placed one of your underreamers with R. H. Herron Company of Los Angeles [703] for sale, had you not, on October 1st, 1902? A. I sold a reamer to R. H.

(Deposition of Frederick W. Jones.)

Herron.” That is a correct statement of your testimony given at that time? A. I expect it is.

RDQ. 345. I show you the record. A. Yes.

RDQ. 346. Isn't it a fact, Mr. Jones, that one of the reasons, or among the reasons why you discontinued the manufacture of the reamers like Defendant's Exhibit Fred W. Jones Reamers Types 1 and 2 was that you had received a letter from Los Angeles dated in November, 1902, signed by Townsend Brothers and by Frederick S. Lyon, notifying you that the manufacture of such reamers was claimed to be an infringement of the patent rights of Edward Double and the Union Oil Tool Company?

Mr. BLAKESLEE.—Objected to as leading.

A. No, sir.

RDQ. 347. (By Mr. LYON.) You don't remember receiving such letter?

A. I didn't receive no such letter.

RDQ. 348. You knew at that time, however, that that claim was made?

Mr. BLAKESLEE.—The same objection.

A. That was on the other reamer after that when I was employed by the California Tool Company. If you remember right I was employed by the California Tool Company at that time, and the letter came to me, and I had a reamer hanging up in the shop on exhibition. That was a reamer of the North pattern.

RDQ. 349. (By Mr. LYON.) That is the way you were cross-examined on the Jones patent?

A. Yes, sir.

(Deposition of Frederick W. Jones.)

RDQ. 350. Now, something over two years prior to that and before you made a reamer of that type, and in the fall of [704] 1902, to refresh your recollection, are you positive that you did not receive a notice that the manufacture of reamers like the Defendant's Exhibit Fred W. Jones Reamers Types 1 and 2, or either of them, was an infringement on the patent rights of Edward Double and the Union Oil Tool Company?

Mr. BLAKESLEE.—Objected to as leading and as an apparent attempt of counsel to impeach his own witness.

A. I can positively testify that I did not—not on the No. 1 and No. 2 model. There was never any dispute about my reamers until I manufactured a No. 3, and then I got a notice. I believe that the notice came from you stating that I must quit or stop the manufacture of a certain underreamer which the Union Oil Tool Company held the patent right to, and I got on the train right then and went down and seen you and seen Mr. North and we settled the thing up before I came away, and the patent then was still pending, and you took over the papers and proceeded to take out the patent and the patent was taken out some months afterwards.

RDQ. 351. (By Mr. LYON.) That is the one you have identified here as the Jones patent?

A. Yes, sir.

RDQ. 352. And the one for which you say you received \$150? A. Yes, sir.

RDQ. 353. And you assigned that to Edward

(Deposition of Frederick W. Jones.)

Double and Edward North?

RDQ. 354. You made no claim at that time, did you, to having been the inventor of any part of any of the Double underreamers?

Mr. BLAKESLEE.—Objected to as leading.

A. I did not, because I didn't think it was necessary. In judging the facts of the case, I didn't want to press my case against the Union Oil Tool Company for several reasons. [705]

RDQ. 355. (By Mr. LYON.) In this conversation which you had with me in the presence of Mr. Yonkin and your wife on Tuesday, August 3d, 1915, at your ranch near McFarland, California, you stated to me, did you, that after the building of the first Double reamer like Defendant's Exhibit No. 3, you conceived the idea of this type 1 underreamer and went to work making a model of it, but that you did not show it to Mr. Double or tell him anything about it, and did not do anything with it toward making one of them till after you left the employ of the Union Oil Tool Company and had gone in with Mr. Skinner.

Mr. BLAKESLEE.—Objected to as leading and not the proper method of proof and as an apparent attempt of counsel to impeach his own witness.

A. Mr. Lyon, you have made a mistake. You have referred to the wrong model. The model that you intend there is the brass model that I have now. The first one was a wooden model of No. 1 and I had in the shop with me and had it in the shop while I was working for Mr. Double.

RDQ. 356. (By Mr. LYON.) Now, will you

(Deposition of Frederick W. Jones.)

please answer the question yes or no?

A. Let me get that question again.

RDQ. 357. The question was, did you not tell me in that conversation that you did not show Mr. Double either of these types of reamers at any time while you were in the employ of the Union Oil Tool Company; that you kept them to yourself until you had left the employ of that company?

Mr. BLAKESLEE.—Objected to as indefinite and not a restatement of the previous question, because there is no definite reference to the particular reamers or types referred to.

A. In answer to the question I will say no. I said though that the model of No. 2 had never been shown to Mr. Double or anyone around the shop, but the model No. 1 had. [706]

RDQ. 358. (By Mr. LYON.) Did you state to me in that conversation—

A. Oh, Mr. Lyon, you are mistaken there. I did not.

RDQ. 359. Did you have any conversation at all with me in regard to the type 1 reamer?

A. Very little, because you said in the fore part of the conversation that that model reamer was not under discussion and it was a model that I had in my mind that we went up to the ranch and found, and that is the one you think I kept secret from Mr. Double. But that was wrong. Now, I intend to be honest about that with you.

RDQ. 360. You had a conversation with Mr. B. N. Yonkin at your ranch on Monday, August 2, 1915,

(Deposition of Frederick W. Jones.)

the day before you had the conversation with me?

A. It was on Sunday.

RDQ. 361. The Sunday previous to the conversation with me? A. Yes, sir.

RDQ. 362. Did you state to Mr. Yonkin at that time that Mr. E. C. Wilson had been up to see you within two or three weeks past?

Mr. BLAKESLEE.—Objected to as leading.

A. Yes, sir.

RDQ. 363. (By Mr. LYON.) And that you had a letter of his that you have not yet answered?

A. Yes, sir.

Mr. BLAKESLEE.—The same objection.

RDQ. 364. (By Mr. LYON.) And that Wilson was trying to get you to bring a suit against the Union Tool Company and Double?

Mr. BLAKESLEE.—The same objection, and not the proper method of proof. Let the witness state the whole substance of the conversation as he recollects it. [707]

A. He mentioned the fact that he thought that I was entitled to just compensation for my work that I had done towards the Union Tool Company in helping to get up that reamer.

RDQ. 365. (By Mr. LYON.) When you say "he" you mean Mr. E. C. Wilson?

A. Mr. E. C. Wilson; yes, sir.

RDQ. 366. What was said in regard to the bringing of such a suit by you at that time?

A. I don't know that there was anything mentioned further than that; that he suggested that I

(Deposition of Frederick W. Jones.)

ought to have my rights.

RDQ. 367. Didn't you tell Mr. B. N. Yonkin on on that Sunday at your ranch that Mr. Wilson was trying to get you to bring a suit against the Union Tool Company and Mr. Double on that account?

Mr. BLAKESLEE.—Objected to as leading, not the proper method of proof, and further on the ground that neither of the parties to the litigation are shown to have been present.

A. I may have mentioned it in that form that I have just mentioned it.

RDQ. 368. (By Mr. LYON.) You had further conversation with Mr. E. C. Wilson for quite a considerable period of time this morning before going on the stand here as a witness?

A. Just a few minutes.

RDQ. 369. And it was some little after 9 o'clock before you appeared, and the delay being caused by your conversation with Mr. Wilson, wasn't it?

A. Well, yes. I was in here once before and there was no one here, and so I went out, and I met Mr. Wilson on the street, and we got into a conversation about what was going to come off.

RDQ. 370. And you were talking with him about three-quarters of an hour.

A. No; hardly that long. I don't think it was over twenty minutes.

RDQ. 371. When I called upon you at your ranch upon the [708] *the* date referred to you stated to me, did you, that Mr. Wilson had offered you money if you would come to Los Angeles and testify in his behalf?

(Deposition of Frederick W. Jones.)

Mr. BLAKESLEE.—Objected to as leading and not redirect examination and not the proper method of proof and not the proper method of proving a conversation.

A. He had offered to pay my expenses.

RDQ. 372. (By Mr. LYON.) And how much else? A. And mileage.

RDQ. 373. And what else?

A. That was all.

RDQ. 374. Did you not state to me in the presence of Mr. Yonkin and your wife that he offered to pay you your own expenses and five dollars a day?

Mr. BLAKESLEE.—The same objection.

A. I don't remember that he did; I don't remember saying that.

RDQ. 375. (By Mr. LYON.) And in such conversation with me did you not state that you wanted a thousand dollars and your expenses to come to Los Angeles to give testimony in this case?

Mr. BLAKESLEE.—The same objection, and on the ground that it is an apparent attempt of the defendant to impeach its own witness, called by it.

A. I mentioned the fact that if my interests in the invention of this reamer was worth anything, it ought to have been worth a thousand dollars. That was the conversation that took place in regard to the money matters.

RDQ. 376. (By Mr. LYON.) And did you not refuse to come to Los Angeles on behalf of defendant in this case unless you were given your expenses and a thousand dollars?

(Deposition of Frederick W. Jones.)

Mr. BLAKESLEE.—The same objection.

A. No, sir.

RDQ. 377. (By Mr. LYON.) Was there any conversation to that effect? [709]

Mr. BLAKESLEE.—The same objection.

A. No, sir.

RDQ. 378. (By Mr. LYON.) Now, please tell us what Mr. Wilson said to you this morning.

Mr. BLAKESLEE.—Objected to as not proper redirect examination and an apparent further attempt to impeach its own witness.

A. In the first part of the conversation we talked about the model reamer No. 1 and he asked if I had got that reamer up, and I told him that I had, and the conversation finally led on to No. 2, and I gave him the facts of the case as they have been stated here before this tribunal.

RDQ. 379. (By Mr. LYON.) Did you have any conversation of any kind with him this morning in regard to compensation? A. None whatever.

RDQ. 380. Have you the letters you received from Mr. Wilson and the telegram?

A. No, sir.

RDQ. 381. Where are they?

A. I don't know that I have got them.

RDQ. 382. How many of such letters and telegrams have you received?

A. I received three telegrams and I think four letters.

RDQ. 383. When did you receive the last of such telegrams? A. Last evening.

(Deposition of Frederick W. Jones.)

RDQ. 384. And when were such telegrams sent to you?

A. It came after dark, and I asked the party that delivered the telegram to telephone Mr. Wilson that I would be here this morning.

RDQ. 385. Have you such telegram with you?

A. No, sir; I have not, The man that brought it out put it in his pocket and took it off with him.

RDQ. 386. Do you remember what was in that telegram?

A. He said it was—I don't just remember the words, but it meant that it was urgent or important that I should meet [710] him here. The second telegram was that I should meet him—asking me to meet him at his hotel, and I answered the telegram and told him that I couldn't do it. Then Mr. Yonkin came out with his subpoena and I was bound to come, and so I got Mr. Wilson's telegram afterwards and I had this friend telephone to this hotel to tell Mr. Wilson that I would be here. That was the sum and substance of the telegrams that went on between us.

RDQ. 387. When did you receive the first of those telegrams?

A. I think it was day before yesterday. I am not positive, though.

RDQ. 388. In which one of those telegrams was it that Mr. Wilson asked you if you had made a deal with the Double or Union Tool Company?

A. He didn't ask me if I had made a deal. He asked me—I don't just exactly remember what the

(Deposition of Frederick W. Jones.)

words were in the telegram, but it was to the effect that if I had been subpoenaed or compelled in any way to give evidence. I can't remember just the words of it. I telegraphed back to him that I had not.

Mr. LYON.—We demand from plaintiff copies of telegrams sent to this witness, particularly copies of all telegrams or letters sent to him by the complainant since the notice was given that his deposition would be taken in this case, and copies of the letters written to this witness in regard to the subject matter of these depositions, referred to by the witness, and the witness is notified that if he has any such letters in his possession to forward them to the Special Examiner, I. Benjamin, at his Los Angeles office. Mr. Benjamin will give you one of his cards. And we ask that such letters be appended to the deposition.

Mr. BLAKESLEE.—We are not aware that there can be any proper demand made for any correspondence had between complainant [711] and this witness prior to the notification that he would be a witness for complainant in this case. As to any telegrams which were transmitted to this witness after notification that he would be a witness in this case, we are willing to furnish copies of same if we have them, and if we have them will do so, unless the witness can furnish the original telegrams himself, and we ask the witness if any correspondence took place between him and Mr. Wilson, aside from these telegrams, subsequent to Tuesday of this week, upon which day informal notice was given to counsel for

(Deposition of Frederick W. Jones.)

complainant that this witness would be called by defendant. Will you answer that, Mr. Jones?

A. I don't quite get that. (Question read by the Examiner.) No, sir.

RDQ. 389. Have you had any letters from Mr. Blakeslee at any time with reference to these matters? A. No, sir.

Mr. BLAKESLEE.—Nor have you written any letters? A. None whatever.

Mr. BLAKESLEE.—Nor did you ever meet me or hear from me at any time prior to this morning?

A. No, sir.

RDQ. 390. (By Mr. LYON.) As a part of the conversation which you had with me on August 3d, 1915, I stated to you at that time, did I, that you had no rights in any of these underreamer matters that could be purchased by anyone anyway, and that you had nothing to sell to the Union Tool Company or to Mr. Double?

Mr. BLAKESLEE.—Objected to as leading, not proper method of proof and an attempt to testify by counsel himself and not the witness, and not redirect examination.

A. Nor I have nothing to sell now.

Mr. BLAKESLEE.—We move that the answer be stricken out as not responsive to the question. [712]

A. I have first to establish my claim.

RDQ. 391. (By Mr. LYON.) I made that statement to you, didn't I?

Mr. BLAKESLEE.—The same objection.

A. Yes.

(Deposition of Frederick W. Jones.)

RDQ. 392. (By Mr. LYON.) And told you that either party, if they wanted your testimony, could subpoena you and you would be compelled to give your testimony, and that you knew that I knew of my own knowledge in regard to the facts of this case?

Mr. BLAKESLEE.—The same objection.

A. Yes.

Mr. BLAKESLEE.—Here is the only copy we can find. “Frederick W. Jones, McFarland, Cal. Lyon notifies me of taking your testimony Bakersfield nine to-morrow. Think it wise you meet me Southern Hotel seven-thirty. E. C. Wilson.”

RDQ. 393. (By Mr. LYON.) During your cross-examination you stated that you rented at different times underreamers of both Defendant’s Exhibit Fred W. Jones Reamer Types 1 and 2 to various persons during the fall of 1902. Was the rental therefor paid?

A. You made a mistake there. Exhibit 1 was never rented, but exhibit 2 was rented and some of the rental was collected, but not all.

RDQ. 394. Did you ever rent the same reamers to the same parties more than once?

A. Yes; I think so.

RDQ. 395. And when such reamers were returned to you after such rental, what did the users have to say in regard to the reamer?

Mr. BLAKESLEE.—Objected to as not the proper method of proof, which would be to call in such parties, not proper redirect examination, and that it should have been gone into upon the direct examina-

(Deposition of Frederick W. Jones.)

tion of this witness if at all. [713]

A. The report of the users of this reamer varied. Some liked it and some didn't like it.

RDQ. 396. (By Mr. LYON.) Did the fact that some of the users did not like it have any weight on your discontinuing the manufacture of it?

A. I don't think so.

RDQ. 397. Explain to us just why you discontinued the manufacture of these reamers.

Mr. BLAKESLEE.—Objected to as not proper redirect examination.

A. I have already stated the reason that we quit manufacturing those reamers.

RDQ. 398. (By Mr. LYON.) You stated that you dissolved partnership with Mr. Skinner.

A. And on account of the competition that was brought to bear upon us.

RDQ. 399. After dissolving partnership with Mr. Skinner what business did you go into?

A. I went to run the shop of the California Tool Company.

RDQ. 400. As an employee of that company?

A. Yes, sir.

RDQ. 401. Did you make any arrangement of any kind with the Los Angeles Well Tool Works for the manufacture of reamers like Defendant's Exhibit Fred W. Jones Reamer Type 2, either on royalty or for them to make and sell them?

A. I don't think I did. They made one reamer, I believe.

RDQ. 402. Do you know what became of that

(Deposition of Frederick W. Jones.)

reamer that the Los Angeles Well Tool Works made like Defendant's Exhibit Fred W. Jones Reamer Type 2?

A. Well, I couldn't swear to it, but I believe that that is the reamer laying there.

RDQ. 403. Did they make that reamer for you?
[714]

A. Yes, sir.

RDQ. 404. Why was it left in their possession?

A. That I don't know.

RDQ. 405. I call your attention to the fact that on the body of that reamer appears the name "W. A. Fairbairn." Do you know who this man was?

A. Yes, sir.

RDQ. 406. Who was he?

A. He was a machinist employed by that firm at that time.

RDQ. 407. At the time that you gave this blueprint to Mr. Close to make the reamer?

A. Yes, sir.

RDQ. 408. Now, with relation to the time that you gave your testimony in this Mills vs. Double interference, which you have identified as August 10, 1903, when was it, before or after that date, that you made these reamers like Defendant's Exhibit Fred W. Jones Reamer Type 2, and gave this order to the Los Angeles Tool Works for the making of such reamer?

Mr. BLAKESLEE.—Objected to as not proper direct examination and a further attempt to impeach defendant's own called witness.

(Deposition of Frederick W. Jones.)

A. It was prior to that date.

RDQ. 409. (By Mr. LYON.) You are positive of that, are you? A. Yes.

RDQ. 410. And you so testified in said interference? I call your attention to XQ. 2: "How long have you been manufacturing that underreamer?"

A. Which underreamer have you reference to?—"

A. That was these two here.

RDQ. 411. You mean Defendant's Exhibit Fred W. Jones Reamer Types 1 and 2? [715]

A. Yes, sir.

RDQ. 412. In your conversation with Mr. E. C. Wilson which you had about two or three weeks prior to August 3d, 1915, at your ranch near McFarland, California, did you discuss your reamer of the type of Defendant's Exhibit Fred W. Jones Reamer Type 1, and refer to the wooden model thereof?

A. I don't remember that we did.

RDQ. 413. Did Mr. Wilson at that time tell you that he had that wooden model?

A. Come to think about it, I believe I asked him something about it, but I really forget the conversation that took place, as he mentioned the fact that it was not important—that particular reamer—in this case.

RDQ. 414. Did you see that wooden model at that time during that conversation? A. No.

RDQ. 415. Isn't it a fact, Mr. Jones, that you saw a Double underreamer constructed in substantial accordance with the drawings of Defendant's Exhibit Double Patent No. 1 as early as the first day of June,

(Deposition of Frederick W. Jones.)

1901, completed in the shop of the Union Oil Tool Company at Santa Paula, California?

A. I couldn't state positively as to the date.

RDQ. 416. It was while you were working for that company?

A. We completed one while I was there, but it was not of this type. I think that one is entirely discarded, as I said before. It was a failure.

RDQ. 417. When, according to your present recollection did you first see a Double underreamer built in substantial accordance with the drawings of Defendant's Exhibit Double Patent No. 1, which is now before you?

A. Well, I could not positively say when it was, to be honest with you. [716]

RDQ. 418. You have identified certain testimony that you gave in the so-called Mills-Double interference, particularly question 10 and your answer thereto which have been read into this record already, and question 11 in that deposition was, "Where was this conversation?" And your answer was "At Santa Paula, in his office. I think it was along about the last of June or first of July. I couldn't state the date exactly. 1901." How long after that was it before you saw the first completed Double underreamer like Defendant's Exhibit Double Patent No. 1?

Mr. BLAKESLEE.—We demand that the witness be shown his testimony in the case, as the question is so disjointed that it might refer to a number of different conversations.

(Deposition of Frederick W. Jones.)

Mr. LYON.—The record of the witness' testimony in said interference is handed to him.

A. I couldn't state positively what date it was that the reamer was completed.

Mr. BLAKESLEE.—It will be noted that the entire procedure is a manifest attempt to impeach defendant's own called witness whose testimony it must adopt.

RDQ. 419. (By Mr. LYON.) And in that same deposition on August 10, 1903, you were asked the following questions, and gave the following answers: "XQ. 12. Then you swear that you were never notified by anyone that your underreamer was considered to infringe said patent and inventions by Double and his company? A. I refuse to answer. XQ. 13. Were you not notified that suit would be brought against you for infringement of letters patent by Mr. Double and his company if you continued to manufacture said underreamer? A. I refuse to answer." That is correct? I show you the record.

Mr. BLAKESLEE.—The same objection.

RDQ. 420. (By Mr. LYON.) Those are the questions and answers? [717]

A. I expect it was. I couldn't swear. My memory is not as fresh as it was at that time.

RDQ. 421. You testified at that time as I have read? A. Yes, sir.

Mr. LYON.—That is all.

Recross-examination.

(By Mr. BLAKESLEE.)

RXQ. 422. At any time prior to testifying in

(Deposition of Frederick W. Jones.)

this case, have you had a conversation with Thomas J. Griffin, present in this room?

A. I never saw the man before to-day nor did I ever have a conversation with him before giving my testimony. I believe though I would know him again.

RXQ. 423. How much of a talk did you have with Mr. Yonkin before testifying to-day?

A. I have talked with Mr. Yonkin three different times, but I have not talked to him to-day at all on this question.

RXQ. 424. Any previous times that you talked with him about these reamers, types 1 and 2?

A. Yes.

RXQ. 425. And he said that the Union Tool Company, defendant in this case, and Mr. Lyon, its attorney, would wish to have you testify for the defendant? A. Yes, sir.

RXQ. 426. Did Mr. E. C. Wilson, present here, the complainant in this case, ever at any time pay you any money or other consideration of any sort directly or indirectly? A. No, sir.

RXQ. 427. You had wired Mr. Wilson yesterday before receiving the wire a copy of which has been put in the record that you could not meet him here at Bakersfield to-day? [718]

Mr. LYON.—Objected to as not the best evidence, no foundation laid for the introduction of secondary evidence, and the defendant demands the production of such telegrams and correspondence.

RXQ. 428. (By Mr. BLAKESLEE.) Have

(Deposition of Frederick W. Jones.)

you a copy of any such wire? A. No, sir.

RXQ. 429. This morning in conversation with you I stated to you, did I not, that it was only right and proper that you should give me a chance to talk with you before you testified in this case, inasmuch as I had been notified or the complainant had been notified that you would be a witness for the defendant in this case? A. Yes, sir.

RXQ. 430. Did I not tell you in that conversation that all we wanted was the plain facts concerning these various matters to be testified about by you? A. Yes, sir.

RXQ. 431. As a matter of fact, you cannot recollect, can you, that Mr. E. C. Wilson, present here, told you at any time prior to this morning about any wooden model of a reamer like type 1 before us?

A. Well, I think that he mentioned something about a wooden model when he was up to my place.

RXQ. 432. He did not ever describe it to you, did he? A. I think not.

RXQ. 433. And you would not be able to say what that reamer was like now at all?

A. No. From what he could tell me of it.

RXQ. 434. Nor would you be able to describe it now from anything he may have said about it at any such time?

Mr. LYON.—Objected to as calling for a mere conclusion [719] of the witness and not the proper method of proof of a conversation.

A. Well, there is only one reamer made with that rounding point, and if anybody ever says anything

(Deposition of Frederick W. Jones.)

to me about a reamer with a rounding point on it, I recognize it instantly, because it is the only one that was ever made. And that is all that he has got to mention, because I know it then. And it seems to me to the best of my knowledge that he mentioned something about this model being rounded at the point. Now, I am not positive about that.

RXQ. 435. (By Mr. BLAKESLEE.) You will not testify under oath that he said anything to you about it? A. No, sir; I cannot.

RXQ. 436. And you are not, as a matter of fact, sure that it was not this morning and only this morning that he referred to such a wooden model in talking to you? Is that correct? A. That is correct.

RXQ. 437. What was the history of this wooden model of which there are three photographs in evidence and which we discussed this morning, after you made it?

A. I don't quite get the question. (Question read by the examiner.) In what way, do you mean?

RXQ. 438. What was done with it after you completed it?

A. If I remember right, I made several of those wooden models and distributed them in different places in the state for exhibition purposes only, as they were all made of wood and made for a $7\frac{5}{8}$ size and just the same shape and proportion as the steel ones would be made.

RXQ. 439. Did one of them go to Newhall, California—at the Newhall Tunnel on the Southern Pacific?

(Deposition of Frederick W. Jones.)

A. Yes; I remember taking one to Newhall and leaving it in the saloon, there. [720].

RXQ. 440. Who ran the saloon?

A. I think the man's name was Pardee.

RXQ. 441. Is that the last you heard of that particular one? A. I believe it is.

RXQ. 442. So far as you know?

A. Yes, sir.

RXQ. 443. Isn't it true that Edward Double whom we have referred to heretofore, gave you to understand when you were in the shop at Santa Paula of which he was foreman, that you being an employee of that shop and he being the foreman of it, that anything that you invented belonged to him?

Mr. LYON.—Objected to as calling for the conclusion of the witness, incompetent, and not the proper method of proof, and on the further ground that it is irrelevant and immaterial in this case, and not cross-examination.

A. I don't think that he did.

RXQ. 444. (By Mr. BLAKESLEE.) Did you have any talks of that sort at that time?

Mr. LYON.—The same objection.

A. Yes. And what had given me the idea was that I had read of cases of that kind where employees had got up inventions and the companies employing them had demanded them and had succeeded in getting possession of them.

RXQ. 445. (By Mr. BLAKESLEE.) Were you paid by that shop or by Edward Double or by any-

(Deposition of Frederick W. Jones.)

body else in connection with that shop to do any actual inventing?

Mr. LYON.—The same objection.

A. No, sir.

RXQ. 446. (By Mr. BLAKESLEE.) While you were there under Mr. Double as foreman, you were paid as a machinist, were you not?

A. Yes, sir. [721]

RXQ. 447. In the testimony you have been referred to—in the Double-Mills interference—with relation to a certain change that was talked about when Mr. Double said the reamer was a mean thing to make, the change suggested was from the removable block at the lower end of the reamer like that shown in the drawings of Defendant's Exhibit Double Patent No. 3, to a stationary part at the lower end of the body of the reamer like part 6 of Defendant's Exhibit Double Patent No. 1, over both of which parts the cutters expanded. Was that not correct?

Mr. LYON.—Objected to as irrelevant and immaterial to this suit.

A. No. You have made a mistake in the reamers. This block, I have it in my mind, that that block is the first reamer that we made. Now, I am not sure and I can't swear to it, but I have it in my mind now that in the Brown model that block was solid and a part of the body, and we could not work this space out behind it, and so I suggested that we cut that whole thing out and put a block in there, and I have

(Deposition of Frederick W. Jones.)

got it in my mind that that was the first reamer that was made. That is, that was the first one that was ever used. I may be wrong, but that is the way I have it in my mind.

RXQ. 448. (By Mr. BLAKESLEE.) And that was the first one worked out of the reamers Double afterwards made or had made for him?

Mr. LYON.—Objected to as irrelevant and immaterial to the issues of this case, and not recross-examination.

A. Mr. Lyon, do you remember if that was not the original model, simply, No. 1? I can't remember that.

Mr. BLAKESLEE.—You have to testify from your own recollection.

Mr. LYON.—I am sorry, but I cannot take the stand and tell you. [722]

Mr. BLAKESLEE.—Read the question again and answer the best you can, and state what you recollect.

(The question is read by the examiner.) That is, the one with the block as you suggested, and the connected parts to fit in at the bottom of the reamer.

Mr. LYON.—The same objection.

A. I believe it was,

Mr. LYON.—I move to strike the answer from the record on the ground that it is incompetent, and upon each of the grounds stated in the objection.

RXQ. 449. (By Mr. BLAKESLEE.) And what was it Mr. Double told you was mean to make about that reamer?

(Deposition of Frederick W. Jones.)

A. Well, it was the working out of the parts in back of the cutters.

RXQ. 450. And he referred, did he, to the Brown reamer as being mean to make?

A. Yes, sir.

RXQ. 451. And you then suggested this detachable part of the block 10? A. Yes, sir.

RXQ. 452. You have stated that you did not attempt to fight Double and his interests, in connection with your reamer rights, for certain reasons. Was one of those reasons that you did not feel you had money enough to wage such a fight?

A. That was one.

RXQ. 453. What other reasons were there?

A. Well, I had boys coming up and I considered that those boys would want a position some time, and I thought it was best to be on good terms with those people for the benefit of the boys.

RXQ. 454. Had it not been for those reasons, would you have attempted to substantiate your rights to these so-called Double reamer inventions? [723]

Mr. LYON.—The same objection.

A. Possibly.

RXQ. 455. (By Mr. BLAKESLEE.) You still feel, do you, that there are rights which were taken from you in those respects?

Mr. LYON.—Objected to as incompetent and calling for a mere conclusion and expression of opinion of the witness and not for a statement of fact and not proper recross-examination.

A. Yes.

(Deposition of Frederick W. Jones.)

RXQ. 456. (By Mr. BLAKESLEE.) In any conversation Mr. E. C. Wilson or myself have had with you, have we attempted to secure information from you with regard to anything further than what you considered your rights concerning these reamer inventions and what you would testify to if called as a witness?

Mr. LYON.—Objected to as incompetent and calling for a mere conclusion of the witness and not a proper method of proof of conversation.

A. No.

Mr. BLAKESLEE.—That is all. Under the stipulation we call on the witness to read over and sign his present deposition and we call on the notary for an extra copy of the deposition of this witness which we will likewise ask him to submit to the witness to sign with the original copy of the deposition, such extra copy, of course, to be at the expense of the complainant.

FREDERICK W. JONES.

Subscribed by said witness this August 27, 1915.

I. BENJAMIN,

Special Examiner. [724].

Deposition of Olive E. Jones, for Defendant.

OLIVE E. JONES, being first duly sworn according to law, testified as follows on behalf of defendant:

Direct Examination.

(By Mr. LYON.)

Q. 1. You are the wife of Fred W. Jones who has just testified in this case? A. Yes, sir.

(Deposition of Olive E. Jones.)

Q. 2. Do you remember what time it was in 1901 when your husband left the employ of the Union Oil Tool Company?

A. It was some time between the middle of July and the first of August. Some time right in there.

Q. 3. And into what business did he go after that?

A. He went into the machine oil tool business, working for himself.

Q. 4. Was he associated with any other person?

A. Yes, sir.

Q. 5. Who? A. George L. Skinner.

Q. 6. Under the name of the Santa Paula Tool Works?

A. I have just forgotten about that.

Q. 7. After your husband became associated with Skinner did he make any underreamers?

A. Yes, sir.

Q. 8. What kind of underreamers?

A. I don't know how to describe them. Like the two models, No. 1 and 2, on the floor.

Q. 9. You refer to Defendant's Exhibit Fred W. Jones, Types 1 and 2, on the floor before you?

A. Yes, sir.

Q. 10. Do you know for how long your husband continued to manufacture these underreamers?

A. Along until November, 1902. [725]

Q. 11. Do you know whether any of either type of such reamers were ever sold or rented?

A. Yes, sir.

Q. 12. Of which type? A. No. 2.

(Deposition of Olive E. Jones.)

Q. 13. To whom do you remember type 2 being sold or rented?

A. Rented to I. G. Waterman, one $9\frac{5}{8}$ and one $7\frac{5}{8}$.

Q. 14. Did you write any letters for Mr. Jones in relation to such rental? A. Yes, sir.

Q. 15. I show you a copy of a letter of March 12, 1903, signed under the name of Fred W. Jones and addressed to Mr. Smiley Ovieda, and a letter to Mr. William J. Griffith under date of June 5, 1903, together with a bill in the name of I. G. Waterman, all three of these letters have been copied as part of Mr. Jones' deposition, and I ask you if you know who wrote these? A. Yes, sir.

Q. 16. Who wrote them? A. I did.

Q. 17. Under your husband's direction?

A. Yes, sir.

Q. 18. Do you know what was done with the original letters?

A. We mailed them to the parties they are addressed to.

Q. 19. Do you know that they were written on the dates that they bear? A. Yes, sir.

Q. 20. Do you remember in 1902 or '3 your husband receiving a letter from me claiming that the manufacture of this type 2 underreamer was an infringement upon the rights of Mr. Edward Double or of the Union Oil Tool Company's patent?

Mr. BLAKESLEE.—Objected to as leading and suggestive; [726] not the proper method of proof.

(Deposition of Olive E. Jones.)

A. Yes. To the best of my knowledge it was received in 1902.

Q. 21. (By Mr. LYON.) There was such a letter? A. Yes.

Q. 22. How do you fix the date as 1902 that your husband was engaged in manufacturing these types of reamers?

A. Well, September 20, 1901, my mother came to California and she was with me seven months. That is one thing. And at that time I know who was working there and it was right back of the house.

Q. 23. You know it was after she left, in the fall after she left, when he commenced first making these reamers?

Mr. BLAKESLEE.—Objected to as leading.

A. Yes; he was making the models or working on them the week she went away or while she was there some time. She went away on the 6th of April.

Q. 24. (By Mr. LYON.) What year?

A. 1902.

Mr. LYON.—That is all.

Cross-examination.

(By Mr. BLAKESLEE.)

XQ. 25. Which reamer was it that your husband, Mr. Jones, was working on in April, 1902, when your mother left?

A. No. 2. He might have built them before she left, but it was during that time somewhere.

XQ. 26. I show you three photographs which constitute complainant's exhibit on cross-examina-

(Deposition of Olive E. Jones.)

tion of Fred W. Jones, photographs of Jones model Defendant's Exhibit Fred W. Jones Reamer Type 1, and ask you if you ever saw any wooden model that looked like these photographs? A. I have [727]

XQ. 27. Do you know of any such wooden model being taken or sent by Mr. Jones to Newhall, California? A. Yes, sir.

XQ. 28. Was it taken there by him?

A. Yes, sir.

XQ. 29. Were you with him when it was taken there? A. No, sir.

XQ. 30. Do you remember when it was taken there? A. No, sir.

XQ. 31. Do you know where Mr. Jones made that wooden model? A. Yes, sir.

XQ. 32. Where?

A. At the shop where he was working.

XQ. 33. That was the shop Edward Double was foreman of?

A. No, sir. I just don't remember.

XQ. 34. You can't say what shop it was?

A. No, sir.

XQ. 35. Can you say the year the wooden model was made? A. 1901.

XQ. 36. Can you say what part of the year?

A. The fore part of the summer; along in the early part of the summer that he made the first one or the little one.

XQ. 37. Was it possibly in April or May, 1901?

A. Yes, sir.

(Deposition of Olive E. Jones.)

XQ. 38. And this larger model was made afterwards? A. Later; yes, sir.

Mr. BLAKESLEE.—That is all.

Redirect Examination.

(By Mr. LYON.)

RDQ. 39. Were you present during the conversation between your husband and myself at your ranch near McFarland, [728] California, on Tuesday, August 3d, 1915?

A. I was present.

RDQ. 40. Mr. B. N. Yonkin was present also at that time? A. Yes, sir.

RDQ. 41. Was there anything said during that conversation as to whether your husband Fred W. Jones had ever shown to Mr. Double either of the models of his reamers like type 1 and type 2, prior to his leaving the employ of the Union Oil Tool Company?

Mr. BLAKESLEE.—Objected to as leading and suggestive and not the proper method of proof of conversation.

A. There was.

RDQ. 42. (By Mr. LYON.) What was said?

Mr. BLAKESLEE.—The same objection.

A. I don't remember just the words.

RDQ. 43. (By Mr. LYON.) Give the words as near as you can.

A. I know that you asked him the question whether Mr. Double had seen the model or not, and he said he did not.

(Deposition of Olive E. Jones.)

RDQ. 44. Is that all you remember in that regard?

A. That is all I can remember now. I was just trying to think. I didn't pay so much attention to it to know.

Mr. LYON.—That is all.

Recross-examination.

(By Mr. BLAKESLEE.)

RXQ. 45. At that conversation what time was mentioned when these were shown to Mr. Double—these models? A. No time at all.

RXQ. 46. Was the question whether they were ever shown Mr. Double or whether they were shown in 1901?

A. I don't remember whether there was any date or anything mentioned.

RXQ. 47. Do you remember definitely whether he was asked whether Mr. Double had ever seen these models? [729]

A. I know it was spoken of whether he has seen the models or not,

RXQ. 48. Do you remember just what your husband said about that?

A. That he had not seen them, but I thought—I never took any notice of what model he meant, but Mr. Jones said he meant the—

RXQ. 49. That he meant the model of type No. 2?

A. That is what he told me. I don't know.

RXQ. 50. That is all you remember about that?

A. Yes, sir.

(Deposition of Olive E. Jones.)

RXQ. 51. In other words, the model of the reamer Defendant's Exhibit Fred W. Jones Reamer Type No. 2, the furthest on the floor? That was made after the model like Defendant's Exhibit Type No. 1? A. Yes.

Redirect Examination.

(By Mr. LYON.)

RDQ. 52. When you say your husband said that it was the type No. 2 model that you referred to, you meant that that is what he said to you during the noon adjournment to-day?

A. Yes; that we were mistaken in his meaning.

RDQ. 53. And this morning you stated to me that your recollection was that he said that he had never shown either of those?

A. Yes; and I thought that that was what he said.

RDQ. 54. (By Mr. BLAKESLEE.) Are you sure what he did say at that time?

A. No, sir; I am not positive. I am telling as nearly as I can remember. I didn't pay so awful much attention to his and Mr. Lyon's conversation.

RXQ. 55. How close were you to Mr. Lyon and your [730] husband at that time?

A. I don't remember; about three or four feet.

RXQ. 56. Were you joining in the conversation?

A. I was talking to Mr. Yonkin.

RXQ. 57. And you didn't take part in the conversation between your husband and Mr. Lyon?

A. No, sir, or at least I don't remember of it.

RXQ. 58. Do you remember anything else your

(Deposition of Olive E. Jones.)

husband said at that time? A. No, sir.

RXQ. 59. And you won't say that definitely, would you, that he referred to any model like type No. 1, would you, at that conversation?

A. I wouldn't say whether he said model or models.

RXQ. 60. You wouldn't say whether it was the model of type No. 1 or type No. 2, or both?

A. No, sir; I would not.

RXQ. 61. Or either?

A. Well, it was a model of some kind.

RXQ. 62. And that is as near as you can state, that it was some model?

A. Yes, sir. But, as I say, I was not engaged in the conversation at that time, although I was near them when they were talking and remember hearing them speak about it.

RXQ. 63. And Mr. Jones had half a dozen different models of different types or reamers in 1901 and '2?

A. No, sir; he had just two that I remember of.

RXQ. 64. I mean he had several models of those two?

A. He had one of the type No. 1—a wooden model—a small one; and then he made two of type No. 2, small ones.

RXQ. 65. And then several larger ones of type No. 1? A. Yes, sir; wooden ones. [731]

RXQ. 66. And you don't know whether that conversation referred to small or large model No. 1, or models of No. 2? A. Not positively, I don't.

(Deposition of Olive E. Jones.)

Mr. BLAKESLEE.—That is all.

RDQ. 67. (By Mr. LYON.) What is your best recollection as to what models that conversation referred to at that time?

Mr. BLAKESLEE.—Objeted to as merely repetition.

A. I supposed that he meant the whole of them.

RDQ. 68. (By Mr. LYON.) Isn't it a fact, to refresh your recollection, that just after that statement you told me that there was an old brass model like No. 2 up at your other cottage.

A. Yes; I remember that.

RDQ. 69. Does that aid you in refreshing your recollection that we were or were not talking about more than one kind of underreamer at that time?

A. Well, I know they were both spoken of that day.

RDQ. 70. And I asked you at that time, didn't I, which kind the one at the other cottage was?

A. Yes.

RDQ. 71. And then Mr. Yonkin, your husband and I took the automobile and drove over there to get it? A. Yes.

Mr. LYON.—That is all.

RXQ. 72. (By Mr. BLAKESLEE.) And during the talk between Mr. Lyon and Mr. Jones about these models at which anything was said about showing to Mr. Double, you were actually talking to Mr. Yonkin?

A. I won't positively say whether I was or not,

(Deposition of Olive E. Jones.)

but I visited with Mr. Yonkin a good deal on Monday when he was there.

RXQ. 73. And Mr. Jones, your husband, this noon told you that he had shown those models to Mr. Double, did he not?

A. He said to the best of his recollection that he had shown the wooden model of No. 1—the little model. [732]

Mr. BLAKESLEE.—That is all.

Mr. LYON.—Did he state that he was positive of it or that he just thought he had?

A. The best he could remember of it.

Mr. LYON.—That is all.

Mr. BLAKESLEE.—We ask that the testimony of this witness likewise be read over and signed by her and that an extra copy thereof be produced at the expense of complainant, and that the same be signed by her at the same time she signs the original copy, and that such copy be furnished to the complainant.

OLIVE E. JONES.

Subscribed by said witness this August 27, 1915.

I. BENJAMIN,

Special Examiner. [733]

Office of Frederick S. Lyon, 504 Merchants Trust Bldg.

Los Angeles, Cal., Monday, August 23, 1915.

This being the time and place appointed for the

taking of the deposition of R. M. Close, the following proceedings were had.

Present: FREDERICK S. LYON, Solicitor for Defendant, and

RAYMOND IVES BLAKESLEE, Esq.,
Solicitor for Complainant.

Deposition of R. M. Close, for Defendant.

R. M. CLOSE, produced as a witness on behalf of the defendant, testified as follows:

Direct Examination.

(By Mr. LYON.)

Q. 1. Please state your name, age, residence and occupation?

A. I am now 56 years old. I live at 926 Grattan St., Los Angeles, California; my occupation is salesman.

Q. 2. How long have you resided in Los Angeles, Mr. Close? A. About 15 years.

Q. 3. Were you at any time connected with the manufacture of oil well machinery and tools?

A. I was.

Q. 4. In what capacity and where?

A. I was superintendent of the Los Angeles Well Tool Works, North Main Street in Los Angeles, beginning there in the fall of 1900.

Q. 5. And for how long were you connected with the Los Angeles Well Tool Works in Los Angeles, California?

A. The exact date when I left there I do not know, but it was sometime prior to June, 1902.

Q. 6. And who was it that succeeded you?

(Deposition of R. M. Close.)

A. Mr. Mills, now of the Mills Iron Works. [734]

Q. 7. That is, Mr.—

A. That is *E. L. Mills*.

Q. 8. Did you ever meet a man by the name of Fred W. Jones? A. I did.

Q. 9. Do you know where he resided at that time?

A. He told me he resided at Santa Paula—

Q. 10. In what connection did you meet Mr. Jones?

A. He came to our works to have an underreamer made.

Q. 11. You say “he came to our works.” You mean— A. The Los Angeles Well Tool Works.

Q. 12. Can you state whether you had any conversation with him at that time; if so, what it was and what was done?

A. Well, about the only conversation was that he brought drawings there, and said that he wanted to arrange to have an underreamer made, and asked if we were in shape to make it for him, and I told him we were, and we went right into the details of it and made the reamer for him.

Q. 13. Do you know where that reamer is at the present time? A. No; I do not.

Q. 14. Look among the various exhibits in this case, and state whether or not there is any one of those exhibits with which you are familiar?

A. Well, this reamer here has all the ear marks of the Los Angeles Tool Works for the reason that William Fairbairn, who was a machinist at our

(Deposition of R. M. Close.)

works, had his name on it. He was a machinist working for me at that time.

Q. 15. W. A. —?

A. W. A. F-a-i-r-b-a-i-r-n. (The witness refers to Defendant's Exhibit Fred W. Jones Reamer, Type 2.)

Q. 16. And about when, Mr. Close, was it that under your supervision and at the Los Angeles Well Tool Works a [735] reamer like Defendant's Exhibit Fred W. Jones Reamer, Type 2, which you have just identified, was made for F. W. Jones?

By Mr. BLAKESLEE. Objected to as assuming a fact not testified to by the witness, that any such reamer as this particular exhibit was made for F. W. Jones, and, therefore, it is leading.

Q. 17. The question is withdrawn. Can you state, Mr. Close, when you first saw this reamer described as Defendant's Exhibit Fred W. Jones Reamer, Type 2, which you have identified?

A. Now, the exact date it would be impossible for me to say, but it must have been in the latter part of 1901 or the early part of 1902.

Q. 18. And under what circumstances did you see it?

A. Well, just having charge of the tool works. We took the tool on an order from Fred Jones.

Q. 19. How is it, Mr. Close, that you fix this date as the latter part of 1901 or the fore part of 1902?

A. 20. Well, I left the Los Angeles Well Tool Works and sold out to Mr. Mills, I think, before May,

(Deposition of R. M. Close.)

1902, and we did not get the shop into full operation until the spring or summer of 1901, and the men that I had working for me at the time that this was made brings it to my knowledge that it must have been sometime during that time.

Mr. LYON.—You may cross-examine.

Cross-examination.

(By Mr. BLAKESLEE.)

XQ. 21. What sort of an order did you receive from Fred W. Jones to make any such reamer?

A. He was there personally.

XQ. 22. Can you state the month he was there?

A. No, I cannot.

XQ. 23. Do you know what was done with any such reamer made for Mr. Jones at that shop?
[736]

A. I cannot remember whether it was shipped to him or whether he came and got it.

XQ. 24. You do not know anything about its after history? A. No; I do not.

XQ. 25. Had you known Fred W. Jones before that time when he first placed the order? A. No.

XQ. 26. Had you known anything about him?

A. No, sir.

XQ. 27. He had never been in your shop?

A. Well, he might have been in the shop and me not know him.

XQ. 28. Do you know where he was residing at that time?

A. He told me he lived in Santa Paula.

(Deposition of R. M. Close.)

XQ. 29. You never saw such an underreamer as this exhibit type No. 2 being used or attempted to be used? A. No, sir.

Mr. BLAKESLEE.—That is all.

By Mr. LYON.—And no redirect examination, now.

R. M. CLOSE, being recalled on behalf of defendant, testified as follows:

Direct Examination.

(By Mr. LYON.)

Q. 30. Mr. Close, the gentleman with Mr. Blakeslee in the room, do you know who he is?

A. I don't know him by name. I have seen his face before, if I am not mistaken. I have seen him at the Los Angeles Well Tool Works, when I was in charge there.

Mr. LYON.—Please note on the record that the gentleman referred to is Mr. Elihu C. Wilson, the complainant in this case.

Q. 31. Under what circumstances did you see Mr. Wilson [737] at the Los Angeles Well Tool Works while you were in charge there?

A. I cannot say, but the gentleman's face is familiar to me. And in what connection I saw him there, it is so long ago now that I cannot state. But his face is very familiar.

Mr. LYON.—That is all.

Cross-examination.

(By Mr. BLAKESLEE.)

XQ. 32. Have you ever seen this gentleman, Mr.

(Deposition of R. M. Close.)

Wilson, since the time you refer to?

A. Probably I have seen him a great many times, but I don't remember any place or anything about it.

XQ. 33. You say "probably." Do you know that you have seen him? A. No, sir.

XQ. 34. Do you know that you have seen him? A. No, sir.

XQ. 35. Do you know that you saw him at the shop at that time—14 years ago?

A. Unless he has a twin, I saw him there.

XQ. 36. You are absolutely positive that it was not somewhere else that you saw him?

A. No; I don't think so. I think I place him as seeing him there, and as to what connection I saw him in there I cannot place that.

XQ. 37. Did you ever visit the Baker Iron Works in the years 1901 and 1902 in Los Angeles?

A. Oh, yes; I have been there from time to time.

XQ. 38. Quite frequently?

A. Oh, no. I was probably in there during my administration of the Los Angeles Well Tool Works, I don't think to exceed three or four times.

XQ. 39. And when you were there you went into the office, I suppose? [738]

A. Sometimes, and sometimes not.

XQ. 40. Didn't you know that Mr. E. C. Wilson was connected with that company and was working in the office? A. No, sir.

XQ. 41. Are you positive you did not see him in that office in the years 1901 and 1902?

(Deposition of R. M. Close.)

A. It might have been there where I saw him.

XQ. 42. And you have seen him there?

A. I might have seen him there.

Mr. BLAKESLEE.—That is all.

By consent of counsel, an adjournment is now taken until 2 o'clock P. M. on this day at this place.

Office of Frederick S. Lyon, 504 Merchants Trust Bldg.

Los Angeles, Cal., Monday, August 23, 1915, 2 P. M.

This being the time and place unto which the further taking of depositions on behalf of defendant was continued, proceedings are now resumed.

Present: FREDERICK S. LYON, Esq., Solicitor for Defendant, and

RAYMOND R. BLAKESLEE, Esq., Solicitor for Complainant.

Deposition of George L. Skinner, for Defendant.

GEORGE L. SKINNER, produced by subpoena issued out of this court, as a witness on behalf of defendant, being first duly sworn according to law, testified as follows:

Direct Examination.

(By Mr. LYON.)

Q. 1. Please state your name, age, residence and occupation.

A. My residence or place of business?

Q. 2. Residence. [739]

A. George L. Skinner, residence, 377 West 42d St., watchmaker and jeweler. Business location, 4811 South Vermont Ave.

(Deposition of George L. Skinner.)

Q. 3. Did you ever, at any time, live in the town of Santa Paula, California? A. Yes, sir.

Q. 4. When?

A. Well, I can hardly tell the year, but I went there in November, 1876, first. I cannot tell exactly the times that I have been there. Let's see. I went back east and I came back in 1886. I don't believe you want anything back of that time, do you?

Q. 5. No.

A. I think I was continuously there, except a few months in Los Angeles, until February, 1905.

Q. 6. Were you ever acquainted with a man named Fred W. Jones, of Santa Paula, California?

A. I was.

Q. 7. Were you ever in business with him?

A. I was.

Q. 8. In what business? A. Oil well tools.

Q. 9. In Santa Paula? A. I was.

Q. 10. When was that?

A. I think we went into business some time in October—wait a minute. I will give you the date. Here is an application for incorporation of the Santa Paula Oil Tool Works, dated October 28, 1901. But prior to that time Mr. Jones had worked in my shop with my services and my tools, during which time he made this first underreamer here. This one here.

Mr. LYONS.—The witness points to Defendant's Exhibit Fred W. Jones Reamer Type 1, [740]

Q. 11. You mean this nearest one to you?

A. Yes, sir.

Q. 12. Type 1. How long did you continue in

(Deposition of George L. Skinner.)

business with F. W. Jones at Santa Paula Oil Tool Works?

Mr. BLAKESLEE.—Let it be shown that the witness refers to a certain memoranda in his hand.

A. No, gentlemen, there was a time before we settled up entirely—Jones left and went to work for Richardson in the Oil Tool Works there, and then after that I had a settlement with him and bought him out. I bought him out and cancelled his stock in the company. Now, those dates as near as I can get at it—(the witness produces a ledger to which he refers)—the last entry prior to our settlement—I can't give the exact date, but the last entry prior to that was August, 1903. I have an entry here as paying him \$38.50 which was part of the payment in settlement with him, on December 26, 1903.

Q. (By Mr. LYON.) 13. And you say prior to this settlement he had for some time been with Richardson? A. Yes.

Q. 14. According to your recollection, about how long?

A. I don't know; according to my books it was somewhere about that time. I don't know. It is a long time and I have been fighting hard to forget this.

Q. 15. You have referred to the incorporation of the Santa Paula Oil Tool Works? A. Yes, sir.

Q. 16. For approximately how long prior to the date of this application for the incorporation of that company had Fred W. Jones been associated with you in any manner in your shop at Santa Paula?

(Deposition of George L. Skinner.)

A. Well, gentlemen, I can't tell. I don't know. It was long enough to build that reamer—one of them, at least. [741]

Q. 17. You refer to reamer, Defendant's Exhibit Fred W. Jones Reamer Type 1? A. Yes, sir.

Q. 18. Did Mr. Jones make more than one of such reamers like this type 1 at your said shop at Santa Paula?

A. I think he did, but I am not positive. He worked on more than one and partly completed them, if he did not complete them.

Q. 19. What became of such reamer or reamers?

A. There is one of them. I don't know. I think one of them was sent here to Herron.

Q. 20. That is the R. H. Herron Company?

A. Yes; I think one of them was sent there.

Q. 21. Did you receive any report, or hear any report given as to whether such reamers as Defendant's Exhibit Fred W. Jones Reamer Type 1, was satisfactory in underreaming or otherwise?

Mr. BLAKESLEE.—Objected to as not calling for the best evidence and not the proper method of proof and calling merely for a hearsay.

A. The understanding was that it was not, and for that reason we quit making it. I can't mention any names who reported it, but I am of the impression that we took the one at Herron's back.

Q. 22. That is your recollection?

A. Yes, sir; as near as I can remember, and I won't be positive even as to that.

Q. 23. And after that, did Fred Jones or did the

(Deposition of George L. Skinner.)

Santa Paula Oil Tool Works, or Jones and yourself make any other reamer?

A. Yes, sir; we made this other one.

Q. 24. Which one?

A. The second one from me. [742]

Mr. LYON.—The witness refers to Defendant's Exhibit Fred W. Jones Reamer Type 2.

Q. 25. And approximately how many of such reamers did you make?

A. I have no record of only disposing of one in my book.

Q. 26. And to whom was that sold?

A. I think Spencer in Colorado—wait a minute. (Referring to letter-book.) I have a bill here to T. E. Spencer, Florence, Colorado, February 28, 1902.

(The following is a copy of the entry referred to by the witness in his letter-book.)

T. E. Spencer,		Feb. 28. 2	
Florence, Colorado.			
Santa Paula Tool Works		Santa Paulina Oil Tool Works	
Santa Paula Oil Tool Works		Successors to	
Feb 28	To underreamer No. 102		200.00
	Less 15% Trade discount	30.00	
“ 15	By cash	60.00	
	“ “ Discount on 60.00	3.00	93.00
		<hr/>	
	Balance due		107.00
5% off of the above \$107.00			
if paid within 5 days.			

(Deposition of George L. Skinner.)

(By Mr. LYON.)

Q. 27. This record, Mr. Skinner, which you have just read to us, is a copy of the bill sent to Mr. Spencer on February 28, 1902, for the said underreamer?

A. Supposed to be, yes, sir; so far as I know. We copied our bills and sent them out that way.

Mr. LYON.—The copy of this bill that has been copied into the record is offered in evidence as a part of this deposition [743] with the same force and effect as if the copy produced by the witness were actually offered. This is for the purpose of leaving the book in the possession of the witness, and I understand counsel for complainant has no objection to that course.

By Mr. BLAKESLEE.—No objection.

By Mr. LYON.—Q. 28. I notice that this bill says “underreamer No. 102.” What does that mean?

A. I think we started the numbers at 100. I know in some work I did before I started to number at 100. It always looked better to start with a hundred than with one.

Q. 29. Do you remember what size reamer this was?

A. No; unless the bill shows; I couldn't tell you.

Q. 30. What kind of an underreamer was this?

A. Like that type 2 there.

Q. 31. Defendant's Exhibit Fred W. Jones Type 2? A. Yes, sir.

Q. 32. Was this reamer ever paid for in full?

A. Yes.

Q. 33. You have the ledger account showing that?

(Deposition of George L. Skinner.)

A. I have.

Mr. LYON.—Do you want to see it, Mr. Blakeslee?

Mr. BLAKESLEE.—No. That is, that particular one?

Mr. LYON.—No; the one sent to Florence.

Mr. BLAKESLEE.—That 102 reamer?

Mr. LYON.—Yes.

A. In fact, I couldn't say that there was any number on them, but I suppose there was.

Q. 34. Were any of these same reamers like this exhibit Fred W. Jones reamer type 2, rented for use?

A. I don't know. Not by the Santa Paula Oil Tool Works, that I know of. There might have been. I don't know, gentlemen, I don't know. It seems as though we rented some underreamers, too, but I can't say. [744]

Q. 35. How was it, Mr. Skinner, that you discontinued the manufacture of reamers like Defendant's Exhibit Fred W. Jones Reamer Type 2, and Mr. Jones went to work for Mr. Richardson?

A. The company was notified—I can't say positively whether by letter or verbally—but I am under the impression that it was by letter—to stop manufacturing those underreamers; that they were an infringement.

Q. 36. Do you remember what company it was in whose behalf that notice was given?

A. I do not.

Mr. LYON.—You may cross-examine.

(Deposition of George L. Skinner.)

Cross-examination.

(By Mr. BLAKESLEE.)

Q. 37. You never witnessed the operation or attempted operation of any reamer like the Jones reamer type 2 before us, did you ?

A. I declare I don't know whether it was type 2 or type 1. We went up once above Santa Paula there—I don't know where—where Billy Stein was. And he took one of the reamers that day that we were there.

Q. 38. You don't know what type of reamer that was ?

A. I am of the opinion that it was type 1, but I am not sure.

Q. 39. Did you stay there until the reamer was pulled out ?

A. It seems to me it was just let down and taken out, but I won't be positive. It was just to see if it went into the hole.

Q. 40. No reaming was attempted ?

A. No; just to test it and see if it would work.

Q. 41. On no other occasion did you see any such attempted use ? [745]

A. No, sir; Jones and I went out there that day. I don't think we were there/at the well/more than half an hour. It was just let down and drawn right up.

Q. 42. This reamer No. 2 that you shipped to Spencer in Colorado was so defective that one of the cutters was returned to you broken. Is that not so ?

(Deposition of George L. Skinner.)

A. I can't say positively, but if I remember right, Jones shipped him other underreamers after I stopped the manufacture. I think there were two others shipped, but I am not positive. But that was by Jones himself.

XQ. 43. You remember, do you not, that a cutter on that particular reamer No. 102 that was shipped to Spencer came back broken?

A. No; I am not positive that it was that one. It seems to me that it was a smaller one—a four-inch. I can't state. I don't want to make an assertion here that I am not positive of. There was one cutter sent back to be replaced for that type of reamer.

XQ. 44. As a matter of fact you don't remember any of these matters you have testified to so clearly that you would swear to any statements concerning them?

A. Positively I could not. It has been so long.

XQ. 45. You admitted to E. C. Wilson, the complainant here present, and myself, last Thursday night, did you not, at your store on Vermont Avenue, that you had been for a long time deliberately attempting to forget all these matters, and that you could not testify to anything about them with any definiteness? A. I did.

XQ. 46. And your present state of recollection or failure to recollect is the same as it was then?

A. Certainly. I don't see how it could be otherwise. If I could state positively on any of these points I would come [746] out flat-footed and say so, but I don't know anything about the merits of

(Deposition of George L. Skinner.)

the case and have no interest in it one way or the other. No one has asked me to swear to one thing or another.

XQ. 47. We are simply trying to determine what the nature of your recollection is. That is all.

A. I understand.

XQ. 48. Do you remember when this notice of infringement that you have been asked about was received at Santa Paula?

A. I have no record of it, but it was after that first reamer was shipped to Spencer and while others were under way of manufacture.

XQ. 49. Was it in the year 1902?

A. It must have been.

XQ. 50. If you were informed that no letters patent were issued to the Union Tool Company, or to Edward Double, its president, before the year 1903, on underreamers, would that alter your recollection in these respects?

A. I don't see how it could. I had no talk with Double. Double and I were not friends at that time.

XQ. 51. Do you remember that it was a notice of infringement of a patent or whether it was merely a notice that a patent might be issued on underreamers?

A. I can't say, but I am of the impression that they claimed infringement and that we would be prosecuted if we continued manufacturing, and I forthwith gave Mr. Jones notice that the company would not work on them any more, and I stopped it right there.

(Deposition of George L. Skinner.)

XQ. 52. And Edward Double, then the foreman of the Union Oil Tool Company shop at Santa Paula, now the president of the Union Tool Company, and Mr. Jones had some controversy, to your knowledge, did they not, with respect to these underreamers?

Mr. LYON.—The question is objected to as containing a [747] misstatement of facts. There is no testimony that Edward Double was as late as February 28, 1902, the foreman of any shop.

Mr. BLAKESLEE.—The question is withdrawn.

XQ. 53. Edward Double was the foreman of the Union Oil Tool Company at Santa Paula just before Fred W. Jones left that shop and entered into business with you, was he not?

A. Well, I don't know whether he was foreman or president of it. He was in charge there.

XQ. 54. Did you know Edward Double at that time? A. I did.

XQ. 55. Did you know him in the year 1901?

A. Yes, sir.

XQ. 56. Were you not frequently in that shop in the year 1901?

A. Possibly. In the forepart of the year but not in the latter.

XQ. 57. Edward Double used to come over to
I. B. used

your shop and see/some of your machine tools?

A. Yes; I worked for him there.

XQ. 58. You knew Fred W. Jones in the early part of the year 1902?

A. Yes, sir; and for two or three years before that.

(Deposition of George L. Skinner.)

XQ. 59. Was there not at that time some controversy between Fred W. Jones and Edward Double, the latter being now president of the Union Tool Company, the defendant in this case, over the origin of certain underreamers?

Mr. LYON.—That is objected to as not cross-examination, irrelevant and immaterial to the issues of this case, and as incompetent and as not the best evidence it not being shown that the witness has any personal knowledge of the subject matter.

A. Nothing of my own knowledge, only through the talk with Mr. Jones. [748]

(By Mr. BLAKESLEE.)

XQ. 60. And is it not true that at that time, in fact, after Mr. Jones entered into the business with you, running the business of the Santa Paula Oil Tool Works, that Mr. Jones discussed with you such controversy over the origin of certain underreamers?

Mr. LYON.—The same objection, and as incompetent, not being shown that such discussion was in the presence of any of the officers of the defendant company.

A. Certainly he did.

(By Mr. BLAKESLEE.)

XQ. 61. It was while Mr. Jones was with the shop of the Union Oil Tool Company at Santa Paula in 1901, Edward Double being then in charge of that shop, that Jones devised this type 1 Jones underreamer, wasn't it?

Mr. LYON.—The same objection.

A. I don't know now when he devised it. I sup-

(Deposition of George L. Skinner.)

pose though that he did during that time.

(By Mr. BLAKESLEE.)

XQ. 62. He did not devise it after he hooked up with you in business in the Santa Paula Oil Tool Works?

A. Oh no; he came in with me to make that — to experiment on that — when he rented my shop.

XQ. 63. Did he not tell you after joining you in business that he had devised that type 1 Jones underreamer while he was connected with the Union Oil Tool Company shop at Santa Paula?

Mr. LYON.—The same objection as last noted on the record.

A. I don't remember any such conversation.

(By Mr. BLAKESLEE.)

XQ. 64. Do you remember that that matter was discussed between you and him at that time and place?

Mr. LYON.—The same objection.

A. It probably was. We naturally would talk of such things.

XQ. 65. And in that connection there was discussion between you and Mr. Jones as to other matters pertaining to the [749] devising of other underreamers at the shop of the Union Oil Tool Company prior to the time Mr. Jones connected himself with yourself in your business, was there not?

Mr. LYON.—The same objection.

A. I don't know, but I am under the impression that the Jones underreamer and the Double underreamer were under creation at that time, or in the

(Deposition of George L. Skinner.)

way of being created at that time. That is the impression that I have — that they were both being worked on at that time.

Mr. LYON.—We move to strike out the answer from the record and exclude it from consideration on each of the grounds stated in the objection to the question, and on the further ground that it is merely the guess or conclusion of the witness and not a statement of fact.

(By Mr. BLAKESLEE.)

XQ. 66. Did not Mr. Jones contend that he had worked up this so-called Double underreamer while connected with the shop of the Union Oil Tool Company before coming over to your shop?

Mr. LYON.—The same objection as last noted on the record.

A. I don't remember anything of that kind. It might have been so.

(By Mr. BLAKESLEE.)

XQ. 67. Didn't Mr. Jones, while connected with you in business in Santa Paula in the year 1902, discuss with you the question of fighting the Double interest over this underreamer question?

Mr. LYON.—Objected to as not cross-examination, as irrelevant and immaterial to the issues of this suit, and as incompetent for any purpose in this case, it not being shown that any such interview or discussion was had in the presence of any officer or agent of the defendant company, and as calling for the mere conclusion of the witness and not the proper method of proof of a conversation if the conversation

(Deposition of George L. Skinner.)

were competent, material or relevant. [750]

A. Yes, I think he did. We were not discussing hardly anything else there for a while.

(By Mr. BLAKESLEE.)

XQ. 68. And did not Fred W. Jones attempt to get you to back him up in such a fight? That is, financially?

Mr. LYON.—The same objection.

A. He certainly did. That is, the Oil Tool Company—not me individually, but the Oil Tool Company.

(By Mr. BLAKESLEE.)

XQ. 69. You mean the Santa Paula Oil Tool Works? A. Yes, sir.

XQ. 70. And you and Mr. Jones owned all of the interest in the Santa Paula Oil Tool Works?

A. Oh, no. My family and his family. That is, including my sister-in-law.

XQ. 71. Did Mr. Jones not at that time contend that he had worked up this so-called Double under-reamer?

Mr. LYON.—The same objection as last noted on the record.

A. I don't think so.

(By Mr. BLAKESLEE.)

XQ. 72. Are you positive as to what he contended in that respect?

Mr LYON.—The same objection.

A. No, I am not.

(By Mr. BLAKESLEE.)

XQ. 73. But you know there was some contro-

(Deposition of George L. Skinner.)

versy over the question of the Double reamer and the Jones reamer?

Mr. LYON.—The same objection.

A. There was.

(By Mr. BLAKESLEE.)

XQ. 74. And did not Mr. Jones at that time contend that he could successfully defend, or that the Santa Paula Oil Tool Works could successfully defend any suit that might be brought under any patent issued upon the application of Edward [751] Double for underreamers, on the ground that he, Fred W. Jones, was the inventor of any such underreamers?

Mr. LYON.—The same objection as last noted on the record.

A. He claimed that he had no infringement on any of Double's patents.

(By Mr. BLAKESLEE.)

XQ. 75. And you don't know that there was any Double patent in existence at that time?

Mr. LYON.—The same objection.

A. I don't think there was at that time. I don't know. I don't think there was. I have no way of knowing. I had no intercourse with Double whatever.

(By Mr. BLAKESLEE.)

XQ. 76. And you are not positive that he did not contend that if there was any invention of an underreamer claimed by Edward Double or the Union Oil Tool Company, that he, Fred W. Jones, was the inventor thereof instead of Edward Double?

(Deposition of George L. Skinner.)

Mr. LYON.—The same objection as last noted on the record.

A. I don't hardly think he made any claim of inventing the Double underreamer. There was features that came up that were talked and discussed where one was supposed to infringe on the other and so on.

(By Mr. BLAKESLEE.)

XQ. 77. In other words, you discussed, did you not, with Mr. Jones at that time at Santa Paula the common features that existed in both the Double reamer and the Jones reamer?

Mr. LYON.—The same objection as last noted on the record.

A. I suppose we did. Naturally men associated that way would.

(By Mr. BLAKESLEE.)

XQ. 78. Didn't Mr. Jones at that time at Santa Paula state to you that he had worked on this Double underreamer when he was at the shop of the Union Oil Tool Company?

Mr. LYON.—The same objection as last noted on the record. [752]

A. I don't know, but I naturally supposed he had worked on it before he left there, but I don't know whether he claimed he did or not.

(By Mr. BLAKESLEE.)

XQ. 79. And that was before there were any underreamers put out by the Union Oil Tool Company shop, was it not?

Mr. LYON.—The same objection.

(Deposition of George L. Skinner.)

A. I don't know.

(By Mr. BLAKESLEE.)

XQ. 80. Are you positive as to any dates that you have testified about aside from the assistance given you in fixing them by the written record you have produced?

A. I have no other way of locating or establishing dates, only by the record.

XQ. 71. And you don't know anything, do you, definitely as to whether any Jones reamer of either type 1 or type 2 actually gave success?

A. Not of my own knowledge. They may have been the most successful in the world, but I have my doubts.

Mr. BLAKESLEE.—That is all.

Redirect Examination.

(By Mr. LYON.)

RDQ. 82. You have referred to the Santa Paula Oil Tool Works receiving a notice that the Jones reamer was an infringement and stated that on account of such notice, such Santa Paula Oil Tool Works, or whatever its name was, discontinued the manufacture of such Jones reamer. Now, was it at that time or prior or subsequent that you had the talk with Mr. Jones in which he endeavored to get that company to finance a defense or suit against the claims of the Union Oil Tool Company?

A. It must have been before that, because when the notice came I stopped the thing right off. I wasn't going to get into any [753] suit where the Santa Paula Oil Tool Works had no interest what-

(Deposition of George L. Skinner.)

ever. I had no object for fighting.

RDQ. 83. Then the notice was before this conversation—the notice of infringement was before this conversation in which Jones endeavored to get you—

A. I don't know. It is just like people sitting here and talking things over and over and over, and possibly of this, that and the other, and it is pretty hard to tell when it was and when it was not what was said. If I could remember perfectly I would *willing tell*, but I don't want to put myself on record as saying things which possibly might never have happened. See? And I would be liable to do it.

RDQ. 84. Referring again to Defendant's Exhibit Fred W. Jones Reamer Type 1, I notice on the side here of this reamer the words "patent applied for." Do you know anything about that?

A. He probably had at that time "patent applied for" on that underreamer.

RDQ. 85. You don't know whether he did not?

A. I didn't see any of the papers whatever.

RDQ. 86. You don't know whether that was the application for type 2 or the other one?

A. Oh, no. We made a model of that and sent it to Washington, I think.

Mr. BLAKESLEE.—Q. 87. On which?

A. Type 2, and the model was sent back, but what it amounted to I don't know.

(Mr. LYON.)

RDQ. 88. There was an application for a patent on No. 2?

A. Yes, because we made a model of it and he sent

(Deposition of George L. Skinner.)

it in, although I did not see the papers. He was charged up for the model and the model was returned from Washington. Consequently I don't think he got any patent on it. I don't know. I don't think he [754] ever got a patent on that. I was worrying at that time trying to save what little I had in the business. Mr. Jones' private affairs would not interest me.

Mr. LYON.—I think that is all.

Mr. BLAKESLEE.—Under the stipulation we ask that this deposition be read over and signed by the witness, and that an extra copy be made thereof at the expense of complainant and likewise signed by the witness and furnished to the complainant so signed.

Mr. LYON.—Does complainant desire any of the books or records produced by this witness in connection with this stipulation other than those that have been copied into the record? The books are here, and if complainant desires, they can be either shown to complainant or offered in evidence.

The WITNESS.—I will take care of the books, because there is some things that I might get something out of, and I might get something out of them, but either one can have access to them.

Mr. BLAKESLEE.—There is nothing but a ledger and a press copybook with a bill in it.

The WITNESS.—You can have that sheet out of the copy-book if you want it.

Mr. BLAKESLEE.—No, no. You told us all about that.

Mr. LYON.—Then you do not care for the originals?

Mr. BLAKESLEE.—No.

The WITNESS.—Any time you want to look over the books you can do so.

Mr. BLAKESLEE.—You might put it this way. It is understood that if either party wishes to produce these books in open court to verify the entries referred to by the witness, that may be done at the final hearing.

Mr. LYON.—By the party so desiring. [755]

Mr. BLAKESLEE.—Yes, but only as to those entries and not chasing through the whole business.

GEO. L. SKINNER.

Subscribed by said witness this 30th day of August, 1915.

I. BENJAMIN,
Special Examiner.

CHANGES AND CORRECTIONS ASKED FOR
IN THE FOREGOING RECORD, NOT
AGREED TO BY COUNSEL.

Page Line

36 12 Change “corner” to “side.”

49 16-22 Strike out and substitute “reamer body which form ways for the cutters. The collapsing of the cutters is produced by an inward motion of the lower ends of the cutters while sliding downwardly on their spread-bearings, during which course the bearings at the back of the shoulders of the cutters

referred to are in contact with the parallel bearing surfaces of the hollow-slotted extension; the upper ends of the cutters tilting outwardly, sliding on the key to which they are attached."

- 61 19 Insert after "of" the words "the shanks of the."
- 65 31 Change "the" before "bodies" to "their."
- 66 2 Insert after "Double" the word "improved."
- 67 8 Insert after "was" the words "more than."
- 68 1 Insert before "cutter" the words "shank of the."
- 68 9 Insert before "cutters" the words "shanks of the."
- 75 20 Change "original claim" to "several claims." [756]
- 78 29 Strike out sentence and insert: "This bearing, which is the bearing at the lower ends of parallel faces of body, in the case of the improved Double underreamer contacts with the cutter and forms the fulcrum or teetering point of the cutter."
- 82 32 Change "appear at " to "co-act with."
- 85 19 Insert "body" after "reamer."
- 92 25 Strike out "not" and insert after "that I" the words "had not seen."

- 247 26 Insert after "cases" the words "at my
expense."
253 28&29 Change "I ever saw" to "I had ever
seen."

United States of America,
State of California,
County of Los Angeles,—ss.

I, I. Benjamin, a notary public in and for the County of Los Angeles, State of California, do hereby certify that the foregoing, numbered consecutively from page 307 to page 617, both inclusive, is a full, true and correct transcript of the testimony taken and proceedings had in the matter of taking proofs in the cause therein entitled, consisting of the testimony and proceedings taken and had on July 23, 24, 26, 27, 28, 30, and August 14 and 23, all in 1915, and consisting likewise of witnesses called on behalf of defendant, namely, Arthur P. Knight, Thomas J. Griffin, Fred W. Jones, Olive E. Jones and R. M. Close, and Geo. L. Skinner and witnesses called on behalf of complainant, namely, Elihu C. Wilson, James Crete Hubbard and Edward L. Mills.

I further certify that the record hereinbefore referred to, together with that portion of the proofs taken in said cause and heretofore certified and filed, and also together with the proceedings of February 2, 9, and 16, 1916, which last named [757] proceedings were heretofore certified by me but not filed, constitutes all the proofs taken before me in said cause.

I further certify that the exhibits, documentary and physical, referred to in said record, were by me

duly marked and identified as stated in the aforesaid record, but that by stipulation of both parties to said cause the same were kept in the custody of counsel and were not delivered to me.

That upon the close of the taking of the proofs herein counsel for the respective parties suggested a number of changes desired to be made in the record, some of which by stipulation have been made in the body of the record, and others were not agreed to. That said proposed changes not agreed to by counsel are attached and made a part of the foregoing record, immediately after page 617 thereof.

IN WITNESS WHEREOF I have hereunto set my hand and affixed my seal this 23d day of February, 1916.

[Seal]

I. BENJAMIN,

Notary Public in and for Said County and State.

[Endorsed]: In the United States District Court, Southern District of California, Southern Division. E. C. Wilson, Complainant, vs. Union Tool Company, Defendant. In Equity.—No. A-4 and B-62, Consolidated. Proofs Taken on Behalf of Defendants and Complainant. Filed Feb. 23, 1916. Wm. M. Van Dyke, Clerk. By Chas. N. Williams, Deputy Clerk.
[758]

In the United States District Court, Southern District of California, Southern Division.

IN EQUITY—No. A-4 CONSOLIDATED WITH
B-62.

ELIHU C. WILSON,

Complainant,

vs.

UNION TOOL COMPANY,

Defendant.

Proceedings on behalf of complainant, in rebuttal, pursuant to stipulation and agreement between the parties, at the office of Raymond Ives Blakeslee, solicitor for complainant, at the California Building, Second and Broadway, Los Angeles, California, beginning at the hour of 10:15 o'clock A. M., August 30, 1915, before Leo Longley, Notary Public, all in accordance with the stipulation and order of Court.

Present: RAYMOND IVES BLAKESLEE, Esq.
on Behalf of Complainant.

FREDERICK S. LYON, Esq., on Behalf
of Defendant.

**Deposition of Elihu C. Wilson, for Complainant
(Recalled in Rebuttal).**

ELIHU C. WILSON, the complainant, having previously testified in this case on his own behalf, being resworn by the notary present, testified further, in rebuttal, as follows, in answer to questions put by Mr. Blakeslee:

Q. 274. You have testified previously in this case,

(Deposition of Elihu C. Wilson.)

Mr. Wilson? A. I have.

Q. 275. Were you present when the deposition of Thomas J. Griffin was taken on behalf of defendant in this case? A. I was.

Q. 276. Did you hear the entire deposition as given by him? [759] A. Yes, sir.

Q. 277. Please state whether or not you were present at a certain conference held on the 18th of June, 1915, at room 440, Douglas Building, Los Angeles, California; and, if so, who were present at that conference?

A. There were present at that conference Thomas J. Griffin, F. A. Stephenson, W. W. Wilson and myself.

Q. 278. Please state whether or not, at that time and place with the same parties present, said Thomas J. Griffin made the following statement, to wit: "I am very frank to say that for all-round purposes the Wilson reamer is better than the Double"?

Mr. LYON.—Objected to as leading, incompetent, not the proper method of proof of conversation, and as irrelevant, incompetent and not rebuttal.

Mr. BLAKESLEE.—Attention is called to the fact that this is a proceeding on impeachment, as to this question, and is predicated upon the record of the defendant in this case.

A. Yes, sir; he made that statement.

Mr. LYON.—Defendant moves to strike the answer from the record and exclude it from consideration, upon the grounds and each of the grounds stated in the objection to the question.

(Deposition of Elihu C. Wilson.)

Q. 279. (By Mr. BLAKESLEE.) In said deposition of Thomas J. Griffin the following question was asked of him: "XQ. 446. At that same conference did you not state and did you not make the offer that for a certain sum of money you would sell certain rights, which you had, or claimed to have, to Mr. E. C. Wilson, the complainant in this case, and certain evidence which you claimed to have to support such alleged rights, and that then, if you were wanted by the defendant in this case, or Mr. Double, in order that you might testify, you could arrange to be out of the jurisdiction of this court?" What have you to say as to any [760] such occurrence?

Mr. LYON.—The same objections as noted to the preceding question.

A. That proposition is the one he put up to us, exactly. He had certain patents, he said, and patent rights, which he wished to sell and he said he had evidence in support of same which would be an absolute defense against any suit which Double could bring or had brought against us for alleged infringements of the Double underreamer patents, and stated, furthermore, that he would never testify for Mr. Double in these underreamer cases again, that he was absolutely done with the bunch, and sick and tired of it, and that he would not under any circumstances whatever testify for Mr. Lyon in these underreamer cases again. He made particular mention of the fact that he was absolutely done with Mr. Lyon. And then he stated, furthermore, that if it would be to our interests, he would leave this jurisdiction alto-

(Deposition of Elihu C. Wilson.)

gether, as he wanted to go to Canada.

Mr. LYON.—We move to strike the answer, and each part and parcel thereof, from the record and exclude it from consideration, on each of the grounds stated in the objection to the question, and as the conclusion of the witness and not a statement of the conversation.

Q. 280. (By Mr. BLAKESLEE.) Said Thomas J. Griffin was also, in his cross-examination, asked the following question: “XQ. 447. Did you not, at that conference, state and offer that for this same consideration, and included in your general offer, you could and would turn over to Mr. E. C. Wilson, there present, certain evidence which would prevent and preclude the Union Tool Company, the defendant herein, and its president, Edward Double, and their associates, and parties jointly interested with them, from winning any suit at present pending between these last-mentioned parties and interests and Elihu C. Wilson, the complainant [761] herein, and the Wilson & Willard Manufacturing Company and their allied interests?” What have you to say as to these matters?

Mr. LYON.—Same objections as noted to the preceding question.

A. Yes, sir. I have just mentioned the fact that he stated that he had evidence, in Texas and elsewhere, which, if we desired—would pay the price that he asked—he could supply us with, and which would be an absolute defense against any suits which Mr. Double might have against us in the un-

(Deposition of Elihu C. Wilson.)

derreamer business. He stated that these inventions were clearly anticipated by reamers which he had used, and which reamers we could use as an absolute defense against Mr. Double. He said these reamers were available; he knew where to get them; they were in Texas somewhere, and he gave us the names of the men who had manufactured them and he gave us the names of certain shops wherein these reamers were supposed to have been made, and the names and the firms checked up with reports we have since received from Bradstreet's and Dun's indicating that such firms existed at that time and that such men were associated with those firms.

Mr. LYON.—We move to strike the answer, and each part and parcel thereof, from the record, upon each of the grounds stated in the objection to the question, and upon the further ground that the same, and parts thereof, are not responsive to the question, and are incompetent, not the best evidence, and that the same is not impeachment, not material matter.

Mr. BLAKESLEE.—It will be understood that while we have referred to procedure on impeachment, with respect to a certain question asked of this witness this morning, it is not to be inferred that this procedure is limited in its purpose solely to impeachment, but its manifest purpose and bearing will be understood, including its direct bearing upon the qualification of the [762] witness Thomas J. Griffin to testify as an expert on behalf of the de-

(Deposition of Elihu C. Wilson.)

fendant in this case, and its tendency to establish bias of said Thomas J. Griffin.

Q. 281. (By Mr. BLAKESLEE.) The following question was likewise asked of said Thomas J. Griffin in his cross-examination: "XQ. 450. Did you not, at that same conference and at the same time and place and in the presence of the same parties, further state that you were sick and tired of the Double and Union Tool Company bunch, using an oath in describing them, and wanted to get away from them, and get what you could out of E. C. Wilson, the complainant herein, for what evidence, information and patent rights you could bring to said E. C. Wilson?" What have you to say as to these matters?

Mr. LYON.—Same objections as noted to the preceding question and answer.

A. Yes, sir; he made that statement to us. He contended he hadn't had fair treatment at the hands of the Union Tool Company "bunch," as he expressed it, and that he was sick and tired of their treatment; that they had refused to pay him royalties which were coming to him and he had about \$2500 due him then which they had refused to pay, and that he was altogether very much dissatisfied with their treatment and that he wanted to get out and get entirely free of them and get away from here altogether, and that he was willing to sell out what information and what interests he had and sell them to us and get what he could for them.

(Deposition of Elihu C. Wilson.)

Mr. LYON.—Move to strike the answer from the record and exclude it from consideration, and each part and parcel thereof, upon each of the grounds stated in the objection.

Q. 282. (By Mr. BLAKESLEE.) Said Thomas J. Griffin was also asked the following question in cross-examination: “XQ. 453. Did you not, at that same interview, at the same time and place and in the presence of the same parties, state that you could [763] produce for said E. C. Wilson evidence that would prove that the said R. E. Bole, patentee of Defendant’s Exhibit Bole Patent, perjured himself in giving his testimony in said Interference No. 37,126, and in his testimony before this same court in the suit now on trial, pending between said R. E. Bole and said Edward Double, on the one hand, and said E. C. Wilson and the Wilson & Willard Manufacturing Company, defendants, in that a certain exhibit, in evidence in both these cases, being a certain tracing purporting to show a key, with alleged witnesses’ signatures thereon, and further matter, was not a genuine document, but that the alleged signatures thereon of one Fahnestock and one Grigsby were in fact forged upon said tracing—were, in fact, traced upon such tracing linen, and not traced thereupon by said parties?” What have you to say as to these matters?

Mr. LYON.—Objected to upon each of the grounds stated in the objection to the preceding question, and particularly as leading, and, if for the purpose of im-

(Deposition of Elihu C. Wilson.)

peachment, upon a matter totally foreign and immaterial to any of the issues in this case.

Mr. BLAKESLEE.—Attention is called to the fact that the record in this case, of the defendant's shows an attempt to read into one of the infringing structures certain matter patented by said Defendant's Exhibit Bole Patent referred to in the question.

Mr. LYON.—The mere fact that the defendant may be using the invention patented in and by said Bole Patent does not place said Bole patent in issue in this case, as shown by the exhibits in this case, to wit, the records of this court in suit, No. B-19, in equity. This court has adjudicated the validity of said Bole patent in a suit in which this court had personal jurisdiction of the parties thereto, and which adjudication can not be collaterally attacked in this proceeding, the only purpose of said Bole patent in evidence being to show that, so far as the invention therein described and patented is concerned, the use thereof by [764] this defendant has not been an appropriation of anything that was in the original Wilson patent, but a subsequent invention.

Mr. BLAKESLEE.—We were quite responsively assuming that the defendant would in this matter attempt to show that it was acting within alleged rights in the use of this key; and the testimony under consideration pertains to the validity of such rights, and what that validity or invalidity might have been found to be had the alleged evidence pur-

(Deposition of Elihu C. Wilson.)

ported to be within the control of the witness Griffin been placed before the court when such question or validity was passed upon.

Mr. LYON.—The objection is renewed, as the validity of such Bole patent is not in issue in this case.

A. Yes, sir; he made that statement to us. He said Bole had lied about it; that he had told him that he, himself, Bole, had traced those signatures on that drawing.

Mr. LYON.—Move to strike the answer from the record, and each part and parcel thereof, on the grounds stated in the objection, and on the further ground that it is not responsive, and not the proper method of impeachment.

Q. 283. (By Mr. BLAKESLEE.) I call your attention to the following testimony given by said witness Thomas J. Griffin in the said cross-examination: "XQ. 457. Now, as a matter of fact, did you not design or were you not responsible for the design of Complainant's Exhibit Type 'F' Reamer, Defendant's Exhibit in this case? A. I have previously testified fully on that matter already. I refer you to such answer, as I have no further answer to make on it. XQ. 458. Is it not a fact that you so stated at the conference on June 18th, as to which I have previously questioned you, at the same time and at the same place and in the presence of the same parties? A. I fully testified on this matter, and refer you to my previous answer. There is nothing to elaborate thereon. XQ. 459. Did you not, at that conference

(Deposition of Elihu C. Wilson.)

[765] and at that time and place and in the presence of those parties, say that you invented that type F reamer? A. The same answer." What have you to say as to these matters?

Mr. LYON.—Objected to upon each of the grounds stated in the objection to the preceding question and set forth in the motion to strike the answer from the record and exclude the same from consideration.

A. I don't remember definitely whether he said that or not. I do remember, however, that he stated that he himself was the inventor of the reversible slips for rotary drive, a patent for which had just at that time been issued to Mr. Edward Double and applied for by Double personally, Double representing himself to be the sole inventor.

Mr. LYON.—We move to strike the answer, and each part and parcel thereof, from the record, on each of the grounds stated in the objection thereto, and upon the ground that the same is not responsive to the question, and immaterial to the issues in this case.

Q. 284. (By Mr. BLAKESLEE.) And what Edward Double did he refer to at that time?

Mr. LYON.—Same objection.

A. The party to this suit; the president of the Union Tool Company.

Q. 285. (By Mr. BLAKESLEE.) I call your attention to the following testimony given by said Thomas J. Griffin in said cross-examination: "XQ. 460. At that same conference, and at that same

(Deposition of Elihu C. Wilson.)

time and place and in the presence of the same parties, did you not state that it was your belief that Dick Smith, the foreman of the Union Tool Company, invented the Double underreamer known as the 'Double Improved Underreamer,' being substantially Complainant's Double Improved Underreamer and Cutters?" What have *you say* as to these matters? [766]

Mr. LYON.—The same objection, and each thereof, as noted to the preceding question. The further objection that it is immaterial what the belief of the said witness Thomas J. Griffin was.

A. Yes, sir; he made that statement at that conference.

Q. 286. (By Mr. BLAKESLEE.) I call your attention to the following testimony in said cross-examination of said Thomas J. Griffin: "XQ. 462. Did you not, at that same conference, and at the same time and place and in the presence of the same parties, say that to the best of your knowledge Edward Double, the president of the Union Tool Company, the defendant herein and the alleged inventor of Defendant's Exhibit Double Patents Nos. 1, 2 and 3, had never invented anything?" What have you to say as to these matters?

Mr. LYON.—Same objection as noted to the preceding questions.

A. Yes, sir; he made that statement, and stated that in his opinion Double didn't have the mechanical ability to make an invention of that sort, and cited, as an instance of Double's inability to grasp

(Deposition of Elihu C. Wilson.)

the mechanical action, a pump which was being manufactured at the Double shop or Union Tool Company shop, manufactured as an invention—represented to be an invention—of Double's and which pump had been giving him, Mr. Griffin, trouble in the field. Mr. Griffin was operating the pump, Mr. Double didn't understand the mechanical action of that pump, although he pretended to be its inventor.

Mr. LYON.—We move to strike the answer, and each part and parcel thereof, from the record, upon each of the grounds stated in the objection.

Q. 287. (By Mr. BLAKESLEE.) Who proposed this conference that we are discussing now?

Mr. LYON.—Objected to as leading, and as calling for [767] the conclusion of the witness and not for a statement of fact.

Q. 288. (By Mr. BLAKESLEE—Continuing.) Add to the question: "if you know."

A. The conference was the outgrowth of a communication from Mr. Griffin wherein he stated he wanted to see us or have a talk with us about these patent affairs. He took the matter up with Mr. W. W. Wilson first.

Mr. LYON.—We move to strike the answer from the record, and each part thereof, on the grounds stated in the objection, and upon the further ground that it is hearsay, incompetent, not the best evidence. It appears from the answer of the witness that he has no personal knowledge.

A. (Continuing.)—I might add that he was in

(Deposition of Elihu C. Wilson.)

conference with me and negotiated with me in regard to these matters before this conference, and that this conference was the outcome of the propositions which he had been submitting, and we had this conference for the purpose of ascertaining what he had to offer.

Mr. LYON.—Same motion and objections.

Q. 289. (By Mr. BLAKESLEE.) I call your attention to the following question asked of said Thomas J. Griffin on said cross-examination: “XQ. 466. At that same conference, and at the same time and place and in the presence of the same parties, did you not offer to furnish proof, as part of your offer, in consideration of the said sum of \$10,000, which you requested said E. C. Wilson to pay you, that with respect to the matter of this Defendant’s Exhibit Bole Patent testimony given by the witness Heber and testimony given by the witness Adams was false, in that the said Robert E. Bole made sketches of the key involved in the controversy concerning said Bole patent for both said Heber and said Adams immediately before they testified in said Interference No. 37,126, and that said sketches were so made for said Heber and Adams by said Bole in the presence of defendant’s counsel in this [768] case and in your own presence?” What have you to say in regard to these matters?

Mr. LYON.—The question is objected to as leading, as not the proper method of proof of conversation, and, if for the purpose of impeachment, not the

(Deposition of Elihu C. Wilson.)

proper method of impeachment and as to an immaterial matter having nothing to do with the issues in this suit.

A. Yes, sir; he so stated.

Mr. LYON.—Move to strike the answer from the record and exclude it from consideration, upon each of the grounds stated in the objection to the question. And it will be understood that each of these motions to strike out and exclude from consideration are submitted at the final hearing of this cause upon the submission of the cause without the necessity of any further notice or motion. This applies to all motions of similar character heretofore made or hereafter made in this case on behalf of defendant.

Mr. BLAKESLEE.—It is understood, likewise, on behalf of complainant, that the objections noted of record are to be understood as being made, without the necessity of repetition, before the submission of the case, and without further notice, to be ruled upon by the court upon such submission, either as extant in the record or as elected to be urged by counsel for the complainant.

Q. 290. Reference has been had in your testimony this morning to a certain Interference, No. 37,126, pending between yourself and Robert E. Bole, concerning the original patent of Defendant's Exhibit Bole Patent, offered in this suit. To your knowledge, has there been any adjudication on the matter of said Interference in the Patent Office?

Mr. LYON.—That is objected to as immaterial and irrelevant to the issues in this case, and as an attempt

(Deposition of Elihu C. Wilson.)

to impeach collaterally the judgment and decree of this court, and as incompetent, not the best evidence, not the proper method of proof.

A. Yes, sir; there has been. [769]

Q. 291. (By Mr. BLAKESLEE.) How many such decisions, if more than one?

Mr. LYON.—Same objection.

A. Two decisions.

Q. 292. (By Mr. BLAKESLEE.) And in whose favor have both or either of such decisions been, as between yourself and said Robert E. Bole?

Mr. LYON.—Same objections.

A. Both decisions were in my favor.

Q. 293. (By Mr. BLAKESLEE.) And both decisions found you to be the true, original, sole and prior inventor of the exhibit of said Bole patent?

Mr. LYON.—Same objections, and as leading.

A. They did.

Q. 294. (By Mr. BLAKESLEE.) The Wilson Underreamer and the Wilson Patent are shown as being provided with or containing a bottom bolt or safety-bolt, which is numbered 11 in Complainant's Exhibit Wilson Patent. Can you state whether your company has ever made Wilson underreamers substantially in accordance with the teachings of the Wilson patent referred to from which such bottom bolt was omitted?

Mr. LYON.—Objected to as leading, and as immaterial, and as irrelevant, and as not rebuttal testimony.

(Deposition of Elihu C. Wilson.)

Mr. BLAKESLEE.—The record speaks for itself.

A. Yes, sir; we did.

Q. 295. Were any such reamers sold, and to your knowledge used, without such bottom bolt?

Mr. LYON.—Same objections.

A. Yes, sir.

Q. 296. (By Mr. BLAKESLEE.) Please compare such bottom bolt of the Wilson underreamer with the bolt which holds in place the detachable block of Complainant's Exhibit Reamer Type "F," with [770] respect to construction, arrangement and function.

Mr. LYON.—Objected to as not rebuttal, and as fully gone over by the witness in his testimony heretofore given in the case.

A. These bolts are similar in design, if not exactly the same in design. The mortised square hole to admit the wrench to set the bolt up in place and the holes drilled for cotter-pin to hold the bolt in place in the reamer body, the standard of thread, length and diameter of the bolt, size of the head, and the form of nut which is affixed to the reamer body, are all the same. In fact, we have sold bolts for Wilson underreamers which have been used in the Type "F" Double Underreamer.

Q. 297. (By Mr. BLAKESLEE.) Now, with the detachable block omitted and the bolt in place, in Reamer Type F, without the block please compare the function of said bolt with the function of the bottom bolt 11 of the Wilson patent and reamer?

(Deposition of Elihu C. Wilson.)

Mr. LYON.—The same objections as noted to the preceding question, and upon the further ground that it is a mere hypothetical construction as thus applied to Type F Reamer.

A. Its function would be identically the same—to assist in strengthening the prongs, prevent spreading of the prongs, if such a strain would occur. It would be a safeguard against the loss of cutters, in the event of breakage of the T or mandrel to which the cutters are attached.

Q. 298. (By Mr. BLAKESLEE.) From your experience as a manufacturer of underreamers, and underreamers having space projections at the lower ends or forks or prongs connected by such a bolt, please state whether or not the forks or prongs of the Type F Underreamer referred to, either with or without such bolt connecting them, would be strong enough to stand up under service in reaming without the detachable block of the Type F reamer?

Mr. LYON.—Same objections as made to the preceding question. [771]

A. Yes, sir; the prongs of either the Model F Double Underreamer or the Wilson underreamers are sufficiently strong to stand up under ordinary reaming without the use of the safety bolt or without the use of the block and safety-bolt employed to hold the block in place in the Type F Reamer.

Q. 299. (By Mr. BLAKESLEE.) That is, with or without the block?

A. With or without the block, or with or without the bolt.

(Deposition of Elihu C. Wilson.)

Q. 300. Please state what the practice is as to remachining the bodies and forks of the Wilson reamer, after wear, if there be such, has upset or removed any of the formation in those parts?

Mr. LYON.—That is objected to as assuming that there is a practice, and as not rebuttal, having been fully gone over in the former depositions.

A. For several years we have advertised, generally, the Wilson underreamer as being the only one in use which could be remachined after the body had been worn to such a point that the cutters were ordinarily considered too loose. We could cut off the spreading-bearings and machine the mouth further back up into the reamer body, drill a new hole for the safety-bolt, cut a new slot for the key, and retemper the body, and it was then just the same as a new one. We made the bodies extra long in order to permit that multiple use of the body.

Q. 301. (By Mr. BLAKESLEE.) Can you state whether such remachining is possible with Complainant's Exhibit Reamer Type "F"?

Mr. LYON.—Same objections as to the preceding question.

A. Yes, sir; such remachining is possible. In fact, they are advertising now that they can do that.

Mr. LYON.—Move to strike the latter part of the answer from the record and exclude it from consideration, on the ground [772] that it is incompetent, not responsive to the question, hearsay, not the best evidence.

(Deposition of Elihu C. Wilson.)

Q. 302. (By Mr. BLAKESLEE). Either with or without the bolt holding the detachable block in Complainant's Exhibit Reamer Type "F" and either with or without such block and bolt, please compare the lower end of such reamer type F with the lower end of the Wilson underreamer or the Wilson patent structure, with respect to any pronged or forked construction that you find?

Mr. LYON.—Objected to as not rebuttal, and as having been fully gone over by the witness in his previous deposition in this case as part of complainant's opening proofs.

Mr. BLAKESLEE.—The record speaks for itself.

A. In both cases, or in each case, the lower extension, or, namely, that part of the body in which the cutters are confined, consist simply of two forks, one at either side of the body of the reamer. The end of the body terminates in two prongs, forming a fork. That is true in either Type F Double Underreamer or the Wilson underreamer. The cutters are held in place by dovetail ways or grooves or projecting shoulders, which are on the inner faces of these two prongs. In these grooves or ways the cutters fit, and the shanks of each are confined between the two prongs. The extreme lower ends of the two prongs in either case terminate in lugs or projections which form spreading-bearings for the cutters, which bearings expand the cutters into full reaming position, and also bearings upon which the cutters rest while in reaming position. These spreading-bearings are

(Deposition of Elihu C. Wilson.)

interposed between the cutters, keeping them spread apart. Each of the prongs is drilled for the purpose of forming holes into which the safety-bolt or the block-bolts is inserted and screwed firmly into place. In either case the lugs or projections which are the lower terminations of the forks are free from any dovetail shoulders which hold the cutters in position, preventing further outward extension or expansion of the cutters. Such shoulders [773] or dovetails are wholly above the lugs referred to. They are on the inner faces of the prongs, but appear entirely above the spreading-bearings which form the lower projection or lug of the prongs. In other words, the sole function of the lugs or projections which form the extreme lower extension of the prongs is to form expanding faces and bearing faces for keeping the cutters expanded while in reaming position. When the cutters collapse they are pulled downwardly over the end of these lugs or projections and the cutters collapse between these lower ends or projections, not riding on these lugs or projections in any way except for the thrust or contact due to the compression of the spring, which tends to pull the cutters upwardly against the extreme lower ends of these lugs. The action in both cases is exactly the same; the construction of the lower ends of the reamer bodies is the same.

Q. 303. (By Mr. BLAKESLEE.) You heard did you, the testimony given by the witness Knight for the defendant in this case?

(Deposition of Elihu C. Wilson.)

A. I heard part of it. I didn't hear it all.

Q. 304. There are certain portions on the inner faces of the prongs of Complainant's Exhibit Type F Reamer which lie between the upwardly and inwardly inclined pairs of dovetails or ways. Do you find these present in the Wilson underreamer or the Wilson underreamer patent?

A. No, sir. Those fragments of the hollow slotted extension, as I would call them, are not present in the Wilson underreamer, for the reason that the Wilson underreamer does not use the hollow slotted extension in any way.

Q. 305. And its provision produces a difference, does it, together with the formation of the Double cutters, with respect to the exact travel of the cutters in collapsion and expansion.

Mr. LYON.—Objected to as leading.

A. There is a difference, yes, sir, as to the exact movement [774] of the cutters when expanding or collapsing, due to the presence of that fragment of the hollow-slotted extension which still remains in type F.

Q. 306. (By Mr. BLAKESLEE.) Does this or does it not make any difference, broadly speaking, with respect to the collapsion and expansion of the cutters in both the reamer type F and the Wilson reamer occurring in the coaction between the cutters and the prongs as such?

Mr. LYON.—Objected to as leading.

A. No, sir; the upwardly and outwardly inclined spreading-bearing faces at the extreme lower end of

(Deposition of Elihu C. Wilson.)

the prongs or spreading-lugs in either case expands the cutters when the cutters are drawn upwardly over them by the contraction of the spring, and the cutters then ride up on the other faces of the lugs or projections and bear upon them when in reaming position. That is true in both cases, either with the Wilson reamer or the so-called Double Underreamer Type F.

Q. 307. (By Mr. BLAKESLEE.) And this interposed metal, while it assists in the expansion and collapsion of the cutters does it or does it not entirely produce such action?

Mr. LYON.—Objected to as leading.

Q. 308. (By Mr. BLAKESLEE—Continuing.) That is, these fragments of the hollow-slotted extension?

A. No, sir. If the block is in place—the renewable block, I mean—it assists in the expansion of the cutters and assists in holding the cutters apart, unless it wears to such a point that the cutters do not come in contact with it, which is liable to occur. And, furthermore, the stock on the lugs or projections which form the extreme lower end of the forks also plays a part in the expansion and contraction of the cutters.

Q. 309. Are they parts of any such hollow-slotted extension or remnants thereof? [775]

Mr. LYON.—Objected to as leading.

Q. 310. (By Mr. BLAKESLEE—Continuing.) These last mentioned lug surfaces?

A. There is a portion of that lug surface which

(Deposition of Elihu C. Wilson.)

may be considered a fragment of the hollow-slotted extension, namely, that part which projects inwardly beyond the bottom of the grooved plane for the dovetails.

Q. 311. And how about the remaining part?

Mr. LYON.—Same objection.

A. The remaining part acts just the same as the Wilson underreamer in expanding or contracting the cutter.

Q. 312. (By Mr. BLAKESLEE.) And do these ledges on the prongs of the Reamer Type F in themselves constitute, or constitute parts of, any hollow slotted extension in this Reamer Type F as you find such reamer constructed?

Mr. LYON.—Objected to as leading, and as indefinite and uncertain as to what is meant by the term “hollow-slotted extension.”

A. Type F as made by the Union Tool Company's shop has never had a hollow-slotted extension in it. To say that it is a fragment of the hollow-slotted extension would be to say that they first make the Double Underreamer Type F with a hollow-slotted extension the same as the one having parallel bearing-faces, and all other types of reamers known as Double underreamers, and then, after having it completed, would machine it out, cutting it away, leaving the fragment or ledge you refer to in the inner walls of the prongs of the reamer. But such is not the operation. That reamer is bored out and then all the stock removed, no slot being cut in there for a key, as exists in the Double underreamers. Conse-

(Deposition of Elihu C. Wilson.)

quently it is impossible to conceive of it being a fragment of a hollow-slotted extension, because in that type of reamer no hollow-slotted extension ever existed. [776]

Q. 313. (By Mr. BLAKESLEE.) Does or does not any such hollow-slotted extension exist in this Reamer Type F to any further extent than it does in the Wilson underreamer, or in any particular whatsoever.

Mr. LYON.—That is objected to as leading, and as indefinite and uncertain as to what is meant by the term “hollow-slotted extension.”

A. There is no hollow-slotted extension in Type F, and never was. Never was in any Wilson underreamers.

Q. 314. (By Mr. BLAKESLEE.) What, as you make it out from your experience in manufacturing and patenting underreamers, is the primary purpose of the detachable block found in this Type F Reamer?

A. Well, from my knowledge of patent applications and from my knowledge of mechanics, the block is merely an attempt on the part of Mr. Double to evade the Wilson underreamer patent. It is superfluous; the bearing is not needed; it has a sufficient bearing on the prongs to keep the cutters spread apart and to keep them in operating position when in use, without having the block in place at all. Without that block in place—and, by the way, the reamer is used without the block—there is left nothing to distinguish it from the Wilson underreamer,

(Deposition of Elihu C. Wilson.)

and the only opinion I can have of that block and its purpose is that it was simply an effort to disguise the type F so that it wouldn't be considered a Wilson underreamer.

Mr. LYON.—I move to strike each part and parcel of the answer from the record, on the ground that it is not responsive to the question, merely argumentative, incompetent, and the guess and conclusion of the witness.

Q. 315. (By Mr. BLAKESLEE.) What have you to say with respect to this Type F Underreamer in connection with the mode of assembling the spring-actuated rod and cutters, in comparison with the Wilson underreamer and the Wilson patent? [777]

A. They are assembled in exactly the same manner. The spring-actuated rod or T, with cutters in place, is inserted into the reamer body at the mouth of the reamer body, and the key is placed in this slot, which key extends through the slot in the T underneath the spring, forming a seat for the spring, and which holds the T, the spring and the cutters in place in the reamer body.

Q. 316. Are there or are there not present in Type F Reamer or do there or do there not pertain to the method of expansion and collapsion of the cutters of the Type F Reamer, certain specific and detail features which, while not differentiating from the Wilson reamer and patent in general principle and construction, produce slight differences in the exact detail action of the cutters, and, if so, in what particulars?

(Deposition of Elihu C. Wilson.)

Mr. LYON.—Objected to as leading.

A. There are certain differences. The Double Type F Reamer—so-called Double reamer—uses the double dovetail, that is, two different pockets for dovetails, and the dovetails are formed by grooves planed into the walls of the inner faces of the forks of the body and are upwardly and inwardly inclined. Those differences make a slight difference in the construction of the reamer body—slightly different from the Wilson underreamer. Nevertheless, they are dovetails, and they are on the inner faces of the prongs of the reamer body, have spreading-bearings at the lower end of the prongs, and so forth.

Q. 317. (By Mr. BLAKESLEE.) And in the collapsion and expansion of the cutters do the cutters of Type F Reamer travel in just the same paths that the cutters of the Wilson patent and reamer follow?

Mr. LYON.—Same objection.

A. No, sir. The exact motion or travel of the Double underreamer cutter, even in Type F, is slightly different from [778] that of the Wilson underreamer.

Q. 318. (By Mr. BLAKESLEE.) And how about the degree of expansion, in comparing the two?

A. I think the expansion and contraction of the Wilson underreamer is greater than that of the Double, even in type F.

Mr. LYON.—Move to strike the answer from the record, on the ground that it is incompetent, not responsive to the question.

(Deposition of Elihu C. Wilson.)

Mr. BLAKESLEE.—At this point we offer in evidence, as Complainant's Exhibit Jones' Patent, the copy of said Jones' patent identified on the cross-examination of Fred W. Jones as, "Complainant's Exhibit on Cross-examination of Fred W. Jones. Copy of Jones U. S. Patent No. 809,570," and ask that the same be so marked.

Mr. LYON.—Objected to as irrelevant and immaterial, needlessly encumbering the record.

The document last referred to and offered in evidence is marked "Complainant's Exhibit Copy of Jones U. S. Patent No. 809,570."

Mr. BLAKESLEE.—Likewise, we offer in evidence the three photographs marked for identification heretofore as, "Complainant's Exhibit on Cross-examination of Fred W. Jones, Photographs of Jones' Model of Defendant's Exhibit, Fred W. Jones' Reamer Type 1," and ask that the same be marked "Complainant's Exhibit F. W. Jones' Reamer Model Photos."

Mr. LYON.—Objected to as incompetent, no foundation laid, not the best evidence.

The photographs last referred to and offered in evidence are marked "Complainant's Exhibit F. W. Jones' Reamer Model Photos."

Q. 319. (By Mr. BLAKESLEE.) Do you know whether the Union Tool Company, the defendant in this case, is now putting out any [779] published matter, by catalog or otherwise, purporting to picture or in any way describe reamers such as Complainant's Exhibit Reamer Type F?

(Deposition of Elihu C. Wilson.)

A. Yes, sir; he is. (Witness produces catalog of Union Tool Company and turns to pages 28 and 29.) That is a recent publication. It was just published within the last—

Mr. LYON.—Week.

Mr. BLAKESLEE.—Complainant offers in evidence this copy of catalog so produced, as “Complainant’s Exhibit Defendant’s Catalog, and particularly pages 28 and 29 thereof,” and asks that the same be so marked.

Mr. LYON.—The offer is objected to in so far as it refers to any part of portion of such catalog other than pages 26, 27, 28 and 29, as needlessly encumbering the record.

Mr. BLAKESLEE.—We do not wish the exhibit as offered to be considered further than the pages 26, 27, 28 and 29 just referred to by counsel, together with the title page of the catalog, and assume that counsel admits that this is a sample of catalogs recently issued by the defendant corporation.

Mr. LYON.—It is admitted that pages 26, 27, 28 and 29 are true copies of an issue of catalog which defendant company has recently published and is now circulating in the offering for sale of its underreamers; and, in view of this admission, we object to the title page offered, as unnecessarily encumbering the record.

Mr. BLAKESLEE.—That page of the catalog may be withheld from the offer, in view of the stipulation.

The catalog last referred to and offered in evidence

(Deposition of Elihu C. Wilson.)

is marked "Complainant's Exhibit Defendant's Catalog, and particularly pages 28 and 29 thereof."

Q. 320. Can you also produce any photograph of the several parts of the Wilson underreamer as now manufactured by or on [780] behalf of yourself?

A. (Witness produces photograph.)

Q. 321. What does this photograph show?

A. It shows Wilson underreamer disassembled, showing all the parts and tools that were used in assembling it.

Mr. BLAKESLEE.—Complainant offers in evidence photograph just produced by witness and asks that the same be marked "Complainant's Exhibit Wilson Unassembled Underreamer Body."

The photograph last referred to and offered in evidence is marked "Complainant's Exhibit Wilson Unassembled Underreamer Body."

Mr. BLAKESLEE.—Counsel may cross-examine.
[781]

Deposition of James Crete Hubbard, for Complainant.

JAMES CRETE HUBBARD, a witness produced on behalf of the complainant in rebuttal, being first duly cautioned and solemnly sworn to testify the truth, the whole truth, and nothing but the truth, deposed as follows in answer to questions put by Mr. Blakeslee:

Direct Examination.

Q. 1. Please state your full name, age, residence and occupation.

A. James Crete Hubbard. Residence, Ingelwood,

(Deposition of James Crete Hubbard.)

California. Age, thirty-five. Occupation, salesman for Wilson & Willard.

Q. 2. With whom are you connected as salesman at present?

A. Wilson & Willard Manufacturing Company.

Q. 3. The concern of which Mr. E. C. Wilson, the complainant in this case, is president?

A. Yes, sir.

Q. 4. You are employed considerably by that company in visiting the various oil well properties and fields in California, are you? A. Yes, sir.

Q. 5. I call your attention to Complainant's Exhibit Reamer Type F, on the floor, here, or, rather, standing up with its end on the floor, parts of the same being removed and on the floor, and ask you if you have ever seen such an underreamer as that in the California oil fields?

A. Yes, sir; I have.

Q. 6. Did you ever see any such underreamer used or attempted to be used in those fields?

A. Yes, sir.

Q. 7. Where?

A. I saw one on the General Petroleum, at Taft, California, or H. & H. Lease.

Q. 8. And when was that? [782]

A. That was between the 1st and 5th of June, 1915.

Q. 9. What, if anything, was being done with it when you saw it?

A. They were running the reamer. I saw the reamer pulled out of the hole and disconnected from the stem.

(Deposition of James Crete Hubbard.)

Q. 10. And laid aside? A. And laid aside.

Q. 11. And did that reamer as pulled from the hole at that time and place have in place such a block as you find in position between the forks at the end of this Type F Reamer Exhibit before us?

Mr. LYON.—Objected to as leading.

A. No, sir; the block was removed.

Q. 12. (By Mr. BLAKESLEE.) Was there any such block connected with the reamer at that time?

Mr. LYON.—Objected to as leading.

A. There was no block; no.

Q. 13. (By Mr. BLAKESLEE.) Was there or was there not any bolt or pin such as constitutes part of this Exhibit Reamer connected with or part of that reamer at that time?

Mr. LYON.—Objected to as leading.

A. Yes; the bolt was in the reamer.

Q. 14. (By Mr. BLAKESLEE.) Where was the bolt?

A. Right through the bottom of the reamer; through here (showing).

Q. 15. And was there or was there not anything in place on that bolt?

Mr. LYON.—Objected to as leading.

A. Why, the reamer was completely set up; that is, the cutters and the key and bolts were in there, with the exception of the block.

Q. 16. And what was the general condition of the reamer as it was pulled from the hole, as you saw it?

[783]

(Deposition of James Crete Hubbard.)

A. Well, it showed it had been used; it was worn. It had a tendency to spread a little here at these points.

Mr. BLAKESLEE.—Witness points to the lower ends of the forks or prongs.

Mr. LYON.—No, sir; the witness points to the lower ends of the dovetails.

Mr. BLAKESLEE.—All right. Near the lower ends of the forks or prongs.

Mr. LYON.—He points to the ends of the dovetails.

Mr. BLAKESLEE.—Well, not the upper end.

Mr. LYON.—The lower end.

Mr. BLAKESLEE.—Witness points to the lower ends of the dovetails. Put it that way and it will be all right.

Q. 17. Can you find that bolt there on the floor, Mr. Hubbard?

A. (Witness exhibits bolt.)

Q. 18. How did the bolt which was in place in the reamer as you have testified, when it was withdrawn from the hole, compare with the bolt being part of this Exhibit Type F Reamer?

A. You mean, how did it compare with this bolt?

Q. 19. Yes, sir.

A. I didn't see the bolt removed.

Q. 20. How about the part of the bolt you could see?

A. The bolt was very much like this bolt.

Q. 21. How about size or diameter?

A. It looked very much the same.

(Deposition of James Crete Hubbard.)

Q. 22. Could you say whether it was smaller or larger than that bolt in diameter?

A. It looked very much the same size. There may have been a slight difference. I couldn't tell as to that. This bolt and the bolt used in that reamer looked very much the same. In fact, I would say that they were identical, although I wouldn't be positive of that unless they were calipered. [784]

Q. 23. Were you at this oil well property while the reamer was being used previous to its withdrawal from the hole? A. Yes, sir.

Q. 24. How long a time were you there while the reamer was being operated?

A. Oh, I was there several times. I suppose I stayed two hours at a time.

Q. 25. While this reamer was in the hole?

A. The reamer was in the hole a couple of times while I was there. Other times they were not using the reamer.

Q. 26. And how long was it in the hole, to your knowledge, prior to the time you saw it withdrawn, as you have testified?

A. Well, probably it was in— They were running the reamer when I went in the rig, and I probably was there about half an hour before they pulled out.

Q. 27. And was the reamer being used in the customary manner, that is, hooked up with the string? A. Yes, sir.

Q. 28. And worked up and down by the walking beam? A. Yes, sir.

Mr. BLAKESLEE.—Counsel may cross-examine, if you desire to do so at this time.

(Deposition of James Crete Hubbard.)

Cross-examination.

(By Mr. LYON.)

XQ. 29. This was not the first time, then, that you had seen that particular underreamer at that particular place?

A. No; I had seen it there a couple of times.

XQ. 30. And had conversation with the men in the rig in regard to it prior to that time?

A. I didn't ask them very much about the reamer.

XQ. 31. Who was in charge there at that time?

A. Mr. Sperry. [785]

XQ. 32. He was the head driller?

A. No, sir; he was the superintendent.

XQ. 33. Who was the driller?

A. The driller at that time was a party by the name of Brown.

XQ. 34. Do you know his initials?

A. I do not.

XQ. 35. Did you have any conversation with them at the previous visit as to whether or not they used this block in the reamer?

A. I asked them nothing about it.

XQ. 36. Did you ever see the reamer in use at any time except this one time when you say you saw it pulled out?

Mr. BLAKESLEE.—Objected to as repetitious, the witness having testified he saw it at two other times.

A. This one reamer?

XQ. 37. (By Mr. LYON.) The Type F Reamer; yes.

(Deposition of James Crete Hubbard.)

A. As I said, I had been there a couple of days at different times of the day, and I saw them; they were running this reamer. But when I saw the reamer pulled out of the hole at one time—at this time I am speaking of—I had been in the rig about half an hour when they pulled this reamer out, and I noted that the block was not in the reamer.

XQ. 38. Did you see the reamer at any other of these times when you saw it was used?

A. No, I saw the reamer after it was disconnected from the stem and setting on the floor.

XQ. 39. With or without the block?

A. Without the block.

X̃Q. 40. Had you ever seen this Type F Reamer in use at any other place? [786]

A. Never saw it in use.

XQ. 41. Have you seen it connected with a string of tools anywhere else?

A. No, I have seen it in the rig.

XQ. 42. With or without the block?

A. Disassembled.

XQ. 43. Disassembled. You don't know whether they used it there with or without the block?

A. I don't know.

XQ. 44. What size reamer was this at this place where Sperry was the superintendent?

A. It was either a four and a quarter or four and a half.

Mr. LYON.—That is all.

Mr. BLAKESLEE (After conferring with Mr. LYON).—We will take an adjournment now until

(Deposition of James Crete Hubbard.)

Wednesday morning at ten A. M., at which time counsel may have an opportunity to cross-examine the witness E. C. Wilson.

Whereupon the further taking of these depositions was continued until Wednesday, September 1, 1915, at 10 o'clock A. M., at the same place. [787]

Wednesday, September 1, 1915, 10 o'clock A. M.
Met pursuant to adjournment; present as before.

**Deposition of Elihu C. Wilson, for Complainant
(Recalled).**

ELIHU C. WILSON, recalled for further direct examination, before cross-examination, in answer to questions put by Mr. Blakeslee, testified as follows:

Q. 322. In your testimony as to the similarity of the prong formations of the lower ends of the bodies of the Wilson reamer and the reamer Wilson patent, on the one hand, and the Complainant's Exhibit Reamer Type "F," on the other hand, what effect upon these similarities are we to understand to be due to the provision of the opposite parallel faces of the ledges found on the inner faces of the prongs or forks of the Type F reamer?

A. Those ledges produce a somewhat different action, as I think I have previously stated, in the collapse and expansion of the cutters. They guide or direct the cutter in its upward or downward movement and while expanding or collapsing, producing a different travel or a different action from that of the cutters of the Wilson underreamers, which cutters swing freely inwardly as they collapse, there being no ledge or corresponding parallel bearing-

(Deposition of Elihu C. Wilson.)

faces on the inner faces of the prongs such as those formed by these ledges on Type F Double Reamer, and that free swing is a different motion or different action from that of the Double underreamer-cutters on any of their types.

Q. 323. And this produces, does it, or does it not—
or, rather, the effects you have just recited produce, do they or do they not—a difference between the specific paths traveled by the cutters in their expansion and collapsion?

A. Yes, sir. The paths of the Double underreamer cutters confined entirely between the two walls of their dovetail ways, the outer one of which is upwardly and inwardly inclined, and the inner wall of which (and which is a part of the ledge spoken of [788] heretofore in describing the Type F Double Reamer) is parallel to the opposite bearing-face, or, rather, the bearing-face of one ledge and the bearing-face of the opposite ledge are parallel. There are no such faces or bearings on the Wilson underreamer, and the Double cutter confined within these upwardly and inwardly inclined dovetail ways are obliged to traverse the course bounded by these bearings or parallel bearing-faces and upwardly and inwardly inclined bearing-faces or dovetails. The Wilson cutters, not being so confined, travel a different course in their expansion and collapsion.

Q. 324. Have or have not these distinctions you have made, including the distinctions previously made with respect to the action of the Double cutters

(Deposition of Elihu C. Wilson.)

directly caused by the upwardly and inwardly inclined dovetails on the prongs or forks, any such bearing upon the pronged or forked structures under consideration as to differentiate the Wilson and Type F reamers as of forked or pronged construction and provided with dovetails or ways and with spreading-bearings at the ends of the prongs or forks, there being safety-bolts disposed between the forks or bridging the space between the forks in each instance.

Mr. LYON.—That is objected to as leading and suggestive, and as incompetent, calling for the mere conclusion of the witness and not a statement of facts.

Mr. BLAKESLEE.—The question does not fairly tend to lead, but merely to broadly summarize previous testimony for the purpose of summarizing the answer; and the query itself is not saddled with any suggestion.

A. The Wilson underreamer has no bearing-faces to take up the inward thrust of the cutters that are parallel—the bearings of the opposite side of the reamer. The design is different from any other reamer or any reamer which Double has ever made. All Double underreamers have opposite parallel bearing-faces to [789] take up the inward thrust of the cutters. Nothing of that sort exists on any type of the Wilson underreamer that has ever been made; but the Double reamer, even in Type F, has bearing-faces to take up the inward thrust, which are parallel. However, the two reamers are alike,

(Deposition of Elihu C. Wilson.)

in that both of them are forked mouth underreamers, namely, all of that part of the reamer body, in each instance, which confines the cutters, consists simply of two prongs forming a fork. They are alike in that particular. They are also alike in that in either case they have dovetail ways or bearing ledges or shoulders to act as retaining means for the cutters, and these dovetail ways or shoulders appear on the inner faces of these prongs. The Type F Reamer and Wilson reamer are also alike in that in each case the lower extremities of the two prongs are formed into wedge-like lugs or projections which form spreading means for expanding the cutters and for keeping the cutters expanded while in reaming position; but both reamers, namely, the Type F underreamer and the Wilson reamer, are provided with safety-bolts which span across from the extreme lower end of one prong to the other and act as a brace or stay to keep the forks from spreading, if such strain should be sufficient to cause them to spread, and also to act as a precautionary measure against the loss of cutters should the T be broken while in use.

Q. 325. And as to the method of assembling of the two reamers, please state again how this method in each case compares with that in the other.

A. They are absolutely the same. First, the spring is put in place on the mandrel or T; the cutters are then put in place on the head of the T; and the spring, T or mandrel, and cutters, are inserted into the reamer body at the mouth of the reamer

(Deposition of Elihu C. Wilson.)

body. A pilot key is then driven in place underneath the spring through the slot in the reamer body and through the slot in the T or mandrel, which pilot key gives the necessary tension to the spring to hold the cutters up in proper position. The pilot. [790] key is driven out by driving in the key, by which key the parts mentioned are held in suspension in the reamer body. The safety-bolt is then applied, and the safety-bolt, or, in some instances, the block with the safety-bolt through it, is inserted in the Type F Double Reamer. In some instances it is used without the block—in Type F, I mean to say—using only the safety-bolt. The operations of placing the cutters—assembling of the reamers, I should say—in either case are exactly the same.

Q. 326. Is such method of assembling of the parts of the reamer possible in the old style Double reamer or in the reamer shown in Defendant's Exhibit Double No. 1?

Mr. LYON.—Objected to as leading.

A. No, sir; the construction is entirely different.

Q. 327. (By Mr. BLAKESLEE.) And in order to assemble the parts and take down the reamer or remove the cutters in this patented type of Double reamer, what, particularly, is necessary?

A. It is first necessary to overcome the tension of the spring, which is done, in the most usual method, by applying an eye-bolt to the T or mandrel—I should say the mandrel—pulling downwardly on the mandrel. The key, which projects entirely through the cutters and through the mandrel, can then be re-

(Deposition of Elihu C. Wilson.)

moved. The cutters can then be removed, as there is nothing to hold them in position after the key has been taken out. The spring and mandrel are placed within the reamer body, and can be removed only by breaking the middle joint in the reamer body. There is no such construction as the middle joint in the Type F Double underreamer, or, no such joint exists in the Wilson underreamer.

Q. 328. From your experience as a manufacturer and inventor of underreamers, what have you to say with respect to the feasibility of using a block, such as that shown in the Type F Reamer, mounted upon the safety-bolt or pin spanning the space [791] between the prongs at the lower end of such reamer?

A. I have previously stated that the block is an unnecessary provision. The bearings at the lower extremities of the fork, namely, the spreading-bearings or lugs, are ample to take up all the thrust or inward thrust-bearing of the cutters.

Q. 329. Just a moment. The question was more as to the feasibility of using the block—the feasibility?

A. The block, when in use, will become burred—does become burred—and the lower end of the forks or prongs become battered, or “upset,” as we term it in mechanics. Also, the spreading-bearings on the faces of the lower end of the forks also upset and have a tendency to crowd over against the block in such a manner as to make it practically impossible to either remove the block or put it in place in the reamer body. This extreme difficulty and incon-

(Deposition of Elihu C. Wilson.)

venience is so great that the drillers simply dispense with the use of the block, as *it not* needed anyway.

Q. 330. In order to strengthen such safety-bolt, is there any necessity of providing any such enlargement, or bushing, or jacket, or shoulder, or whatever else you may wish to call it, upon such safety-bolt as found in the Type F Reamer?

A. No, sir; those bolts do not need such strengthening. Years of service of the Wilson underreamer safety-bolts have proven that they are ample to stand all the ordinary strains, and the safety-bolts in the Type F Double underreamer are almost if not exactly the same in proportions.

Mr. BLAKESLEE.—Counsel may cross-examine.

Cross-examination.

(By Mr. LYON.)

XQ. 331. Where have you seen the Type F Reamer used, Mr. Wilson?

A. I don't know as I have seen it actually in use. I have seen it in the derrick. [792]

XQ. 332. And who was it, to your own personal knowledge, that discarded the use of the block from the bolt at the bottom of Type F Reamer on account of the burring or battering or upsetting of such block or bottom of the reamer?

A. I have never seen them discarded myself.

Mr. LYON.—In view of the statement of the witness, we move to strike the testimony of the witness from the record and exclude it from consideration, in so far as it attempts to detail any such action as the burring or battering up of the block or of the

(Deposition of Elihu C. Wilson.)

bottom of the reamer, or of the discarding of the use of the block in the Type F Reamer, on the ground that the same is hearsay and not the best evidence.

Mr. BLAKESLEE.—Whether or not the witness has seen Type F or Double reamer blocks discarded because of the battering of blocks and associated parts, does not pertain to the question of whether or not he has seen such parts battered; and he has testified he has seen such reamers in the rig.

XQ. 333. (By Mr. LYON.) Please state when and to whom you sold the bottom bolts for the Wilson underreamer which, as you state, were used in the Type F Double underreamer?

A. That answer (answer to Q. 296) may be erroneous in that I am not sure whether we sold them, or one of our agents sold the bolts. Possibly those bolts were sold through the Lucey Supply Company at Taft. They were sold to the General Petroleum Company.

XQ. 334. You have no personal knowledge of the sale or the use of those bolts, have you?

A. I didn't see the bolts in use.

Mr. LYON.—We move to strike from the record and exclude from consideration the testimony of this witness just given in regard to any use of bolts, manufactured by the Wilson & Willard [793] Manufacturing Company, in the Type F Double underreamer, and, also, the last sentence of the answer to the question 296, on the ground that the same is incompetent, not the best evidence, hearsay.

XQ. 335. What parts of the bits or cutters in

(Deposition of Elihu C. Wilson.)

Complainant's Exhibit Type "F" Reamer collapse between the lugs, or projections, or "prongs," as you call them, at the bottom of that reamer?

A. There is a portion of the cutters of the Type F that is between the prongs at all times, and that is the lug by which the cutters are attached.

XQ. 336. You mean, then, the lugs which in the Type F underreamer take the place of the head of the T-bar, or the key, and connect the lugs with the spring-actuated rod or solid mandrel?

A. I mean the upper part—the inner face of the upper part of the cutter.

XQ. 337. Is there any such corresponding part shown, described or illustrated in the complainant's exhibit, Complainant's Exhibit of Wilson Patent in suit?

A. No, sir. Mr. Double, Mr. Bole, or Mr. Jones borrowed that idea from old man Brown, I think.

XQ. 338. Do you not mean—

A. The Brown patent has the same device.

XQ. 339. Do you not mean from Fred W. Jones, and, particularly, from Defendant's Exhibit F. W. Jones' Reamer Type 2?

A. Well, Brown's reamer used that lug before that type of Jones' reamer was made. The Brown patent antedated Jones' invention.

XQ. 340. When did you first learn or hear of an underreamer like Defendant's Exhibit Fred W. Jones Reamer Type 2?

Mr. BLAKESLEE.—Objected to as not cross-examination.

(Deposition of Elihu C. Wilson.)

A. Type 2 is this one, isn't it (indicating)?

XQ. 341. (By Mr. LYON.) Yes; that is it.

A. The first time I ever heard of it or ever knew that such a thing existed was the day you showed it to me in your office only a short time ago. [794].

XQ. 342. What business were you engaged in in the fall and latter part of 1901?

Mr. BLAKESLEE.—Same objection.

A. I was in the office of the Baker Iron Works in this city.

XQ. 343. (By Mr. LYON.) And what was your employment? A. Cost clerk.

XQ. 344. And, as such, what did you do?

Mr. BLAKESLEE.—It will be understood that the same objection is repeated to all this line of questions.

A. I figured the cost of the manufacture of oil well tools and other machinery of various sorts.

XQ. 345. (By Mr. LYON.) For what purpose?

A. Billing them out, and determining our price as a basis upon which to bill them.

XQ. 346. Did you, on September 10, 1901, bill to the Enterprise Machine Works, Santa Paula, California, as such price-clerk for the Baker Iron Works, one set of forgings for F. W. Jones' Pat. Underreamer, for 7 5/8" covering mandrel, of soft steel, and one pair of cutters of bit steel, all as per blue-print? And I show you a copy of such bill at this time.

Mr. BLAKESLEE.—Same objection; and, furthermore, as irrelevant, incompetent and immaterial,

(Deposition of Elihu C. Wilson.)

the making, in a clerical capacity, and sending out of any such bill, not in any sense constituting or involving notice to the complainant of the structure referred to or devise covered by such bill.

A. I have no recollection of having billed it. I possibly did; but if I did, it went through merely as thousands of other orders, with reference to which I simply figured up the time and weight of material. I never saw the drawings; had nothing to do, whatever, with the design; and simply dealt with the figures I reported, namely, the weight of the material and the amount of time employed. [795]

XQ. 347. (By Mr. LYON.) And where, then, did you get for your memorandum, made at that time, such entry, "All as per blue-print," which appears on the records of said Baker Iron Works of such invoice?

Mr. BLAKESLEE.—Same objection.

A. I don't know that I got the record at all. I don't know that I had anything to do with it. Possibly I did. A forging of that size and that kind would give absolutely no indication of what sort of shaped underreamer that was to be. Forgings don't look like the finished article, by any means.

XQ. 348. (By Mr. LYON.) Did you not, in 1902, see a Jones' reamer like Defendant's Exhibit Fred W. Jones' Reamer Type 2 at the R. H. Herrin Company's place of business on North Los Angeles street in the city of Los Angeles, California.

Mr. BLAKESLEE.—Objected to as not cross-examination.

(Deposition of Elihu C. Wilson.)

A. Well, the Oil Well Supply Company has several reamers there, and some very odd and very wonderful designs, most of which, as I have always understood, came from their Pittsburgh shops, and I have always had the impression they were Heggem's designs or Mr. Cummings', so-called inventors. I have never seen the reamers apart. I couldn't tell, nor did I ever know, whether a reamer was made with anything like this design until I saw it in your office.

XQ. 349. (By Mr. LYON.) You testify positively that you have not seen a reamer exactly like Defendant's Exhibit Fred W. Jones' Reamer Type 2 either at the R. H. Herrin Company's place of business on Los Angeles street, in the city of Los Angeles, California, in the year 1902, or at the National Supply Company's place of business, in Los Angeles City, during 1902?

Mr. BLAKESLEE.—Same objections.

A. Yes, sir; I can testify that I never saw that type of reamer apart, never knew the reamer at all.
[796]

XQ. 350. (By Mr. LYON.) Well, did you see the bottom of such reamer at that time, and at either of those places?

A. No, sir; I don't believe I ever did.

XQ. 351. Did you ever see or were the drawings referred to in this invoice like Defendant's Exhibit Fred. W. Jones' Reamer Type 1?

Mr. BLAKESLEE.—Objected to, on the same grounds; and, furthermore, upon the ground that

(Deposition of Elihu C. Wilson.)

there is no proof of the paper referred to by counsel as being an invoice or anything else. The same has not been proven or has not been admitted. It is not the proper method of proof, not cross-examination.

A. There were a great many different designs and styles of underreamers that would appear and then would disappear and no more would be seen or heard of them, all being tried out—different designs at that time. Along in 1901, '2, '3 and '4 there was a period when great demands were being made by oil operators for a reamer which would actually do the work. That was the occasion for my launching into the field myself. No reamers at that time had been satisfactory, none of them had stood up; and if this reamer was ever seen by me, it was one of those that was of such small consequence in results and in interest that I don't remember of ever having seen it or hearing of it being used. I remember that a man by the name of Jones, whom I never saw until a few weeks ago—that is, to the best of my recollection—and whom we knew as living in Santa Paula, was reputed to be the inventor of underreamers, and was known to be in conflict with Mr. Double, of the Union Tool Company, and as having some troubles with Mr. Double in regard to conflicting patent rights. I remember it was common report that Double had forced Jones to discontinue the manufacture of some style of an underreamer, claiming that Jones was infringing some patent rights of his. It was common talk among the supply houses at that time, and the oil well men, that Jones didn't have the money.

(Deposition of Elihu C. Wilson.)

to fight him was the reason he discontinued manufacturing the reamers. [797]

XQ. 352. (By Mr. LYON.) When was it that you knew that it was such common talk and that Jones had such reamers?

A. I think it was about the time that Ed Mills had his trouble with Double.

XQ. 353. That was in 1903?

A. 1903 or '4, or somewhere around in there.

XQ. 354. And you heard this report that you speak of as early as—prior to the time that you actually commenced making, and prior to the time that you had actually invented, as you claim, the Wilson reamer? Is that correct?

A. That is possibly correct; yes, sir.

XQ. 355. Would you consider, based upon your experience, that an underreamer like Defendant's Exhibit F. W. Jones' Underreamer Type 1 would be a practical or operative underreamer for underreaming oil well casing?

Mr. BLAKESLEE.—Objected to as not cross-examination.

A. Yes, sir. It will underream. The Wilson underreamer seems to have so clearly established what an operative underreamer should be that when we compare the older makes of underreamers of different designs that preceded it, we come to the conclusion that they were not operative at all. As a matter of fact, they did operate, and they did underream, but they didn't do it as well as the Wilson underreamer, of course.

(Deposition of Elihu C. Wilson.)

Mr. LYON.—That is all.

Redirect Examination.

(By Mr. BLAKESLEE.)

RDQ. 356. When did you first hear that the F. W. Jones, you have testified about made any claim to have invented the so-called Double underreamer, or to have produced any of the inventions patented by Edward Double, the president of the defendant corporation, or to have had anything to do with the inventing or devising of such underreamers? [798]

Mr. LYON.—That is objected to as leading, and as irrelevant and immaterial to the issues of this suit.

A. The first intimation I ever had that Jones had anything to do with the invention of Double underreamers was probably five or six months ago, maybe six or eight—

RDQ. 357. (By Mr. LYON.) What?

A. Five or six months ago, maybe six or eight, that he had anything to do with the invention of any of the reamers which Double has patented in his own name.

RDQ. 358. (By Mr. BLAKESLEE.) When was it that you first were able to locate Mr. Jones?

Mr. LYON.—That is objected to as calling for the conclusion of the witness, and as assuming facts not testified to by the witness, and as irrelevant and immaterial to this case.

A. A man who is in some way related to Jones was in our shop, the Wilson & Willard Manufacturing Company. He had been an employee of the Union Tool Company's shop. In mentioning patents and

(Deposition of Elihu C. Wilson.)

discussing litigations pending, he asked why we didn't get in touch with Mr. Jones, who had formerly been associated with Double in some way at the Santa Paula shop years ago. He then told us that he understood Mr. Jones had contributed to those inventions. He gave us Jones' address, and we wrote Mr. Jones a letter, and received a reply.

RDQ. 359. (By Mr. BLAKESLEE.) And how long ago was this?

A. Oh, that was probably five or six months ago. I don't remember the exact date.

RDQ. 360. And when did you first see Mr. Jones?

Mr. LYON.—Same objections.

A. Two or three months ago.

RDQ. 361. (By Mr. BLAKESLEE.) And when was it you first heard, in any manner other than as mere hearsay, that F. W. Jones claimed to be the inventor of any of the inventions patented by Double? [799]

A. The first letter I received from Mr. Jones stated that he had contributed to the invention of Double reamers, he having assisted in the invention of the first reamer, which they manufactured at the Santa Paula shop, or the shop of the Union Oil Company, the one, he stated, which had been used to defeat Mills in the litigation against the Mills' patent. I think that is about all he said.

Mr. LYON.—We move to strike the answer from the record, and exclude it from consideration, as incompetent, not the best evidence, no foundation laid for the introduction of secondary evidence, and not

(Deposition of Elihu C. Wilson.)

responsive to the question.

RDQ. 362. (By Mr. BLAKESLEE.) And when were you first able to meet Mr. Jones himself?

Mr. LYON.—That is objected to as calling for the conclusion of the witness and not for a statement of the facts.

A. Within a short time. Two or three or three or four weeks after the receipt of the first letter from him, I made a trip to McFarland, in Kern County, California, and went out to Mr. Jones' place, which is within about three miles of McFarland, and saw Mr. Jones and had a talk with Mr. Jones; and Mr. Jones again explained that he was, at the least, a coinventor of that first reamer which they had manufactured, namely, the one with the removable block.

RDQ. 363. (By Mr. BLAKESLEE.) When did you first see any evidence backing up this statement last quoted to you?

Mr. LYON.—That is objected to as irrelevant and immaterial, and as calling for the conclusion of the witness, and not the best evidence, incompetent.

A. I saw a wooden model of an underreamer. At the time I first saw it, I didn't know who was the inventor; supposed it was another party. I also saw a reamer which was pointed out to me as being a Jones invention; and that is the reamer No. 2, which I have referred to previously, and which was first shown to me by [800] Mr. Lyon in his office a short time ago.

RDQ. 364. (By Mr. BLAKESLEE.) State, as

(Deposition of Elihu C. Wilson.)

nearly as you can, when, please. You have not given any time for the first wooden model.

A. The wooden model I saw first here some month or six weeks ago, and at that time I supposed it was the invention of a man by the name of Pardee, as Mr. Griffin said he was the inventor of that reamer.

RDQ. 365. And when was it you first saw this Type 2 Reamer in Mr. Lyon's office?

A. The exact date we can get. It was during the time we were taking the deposition of Mr. A. P. Knight, in Mr. Lyon's office, in this case.

RDQ. 366. When did you first know that F. W. Jones had anything whatsoever to do with Jones Reamer Type 1, in evidence?

A. I think the first time I knew that Mr. Jones had anything to do with the invention of that Reamer Type 1, in evidence, was in Bakersfield, at the time we were taking Mr. Jones' deposition there in this case. The first time I ever saw it was when we were taking Mr. Jones' deposition in this case there, a few days ago, in the Southern Hotel.

RDQ. 367. And when the Type 2 Jones Reamer, in evidence, was shown to you, was any contention made that it was devised prior to the date upon which Double is supposed to have made his first Double invention patented?

Mr. LYON.—That is objected to as incompetent, irrelevant and immaterial and as leading.

A. No, sir; no such contention was made.

RDQ. 368. (By Mr. BLAKESLEE.) Then, is it or is it not true that you first saw anything tend-

(Deposition of Elihu C. Wilson.)

ing to reinforce the contentions of F. W. Jones that he had invented a reamer prior to the date of the invention of any Double reamer was at Bakersfield [801] some two weeks and a half ago when you there saw the Type 1 Jones Reamer, in evidence, or, possibly, some day or two before that, when I reported to you that Mr. Lyon had stated to me that Jones had invented such a reamer?

Mr. LYON.—Objected to as leading, as incompetent, calling for the conclusion of the witness, not the best evidence, no foundation laid for the introduction of secondary evidence, and as irrelevant and immaterial to the issues of this case.

A. That is the first underreamer I ever saw that was definitely pointed out to me as being a Jones underreamer. When Mr. Jones referred to a removable block underreamer, reference to which he made at the time I visited him at McFarland, I knew at once which reamer he meant, because I was familiar with the patent.

Mr. LYON.—Move to strike the answer from the record, and exclude it from consideration, upon each of the grounds stated in the objection to the question, and upon the further ground that the statements made by Mr. Jones are not competent—they are hearsay.

Mr. BLAKESLEE.—Just note that Mr. Jones is a witness in this case.

RDQ. 369. Did you or did you not see any underreamer or model at that time?

Mr. LYON.—Same objection.

(Deposition of Elihu C. Wilson.)

A. No, sir.

RDQ. 370. (By Mr. BLAKESLEE.) And prior to the meeting with this man who came to your shop who had been employed with the Union Tool Company, the defendant, some months ago, had you ever heard it even contended that said F. W. Jones was sole or joint inventor of any underreamer patented by Double?

Mr. LYON.—That is objected to as leading, and as incompetent, not the best evidence, calling for the conclusion of the witness, not for a statement of facts, irrelevant and immaterial to the issues in this case. [802]

A. No, sir; I think that was the first time I ever heard that statement, I had heard, as I have stated before, that Mr. Jones and Mr. Double had some differences as to patent rights on underreamers and Double had threatened Jones with a suit.

RDQ. 371. (By Mr. BLAKESLEE.) But had you heard, in that connection, that Jones contended to be the inventor of the Double underreamer?

Mr. LYON.—Same objections as last noted on the record.

A. No, sir.

RDQ. 372. (By Mr. BLAKESLEE.) Now, speaking of the Brown patent as antedating the Jones invention, in your cross-examination, did you mean the Brown patent or the—

A. The article.

RDQ. 373. — the Brown invention or the Brown reamer?

(Deposition of Elihu C. Wilson.)

Mr. LYON.—That is objected to as leading, and as irrelevant and immaterial to the issues of this case.

A. The Brown underreamer, which was later patented, was devised before any of the Double underreamers or Jones reamers were devised.

RDQ. 374. (By Mr. BLAKESLEE.) Then, which of the mentioned things in the last question did you refer to in your cross-examination?

Mr. LYON.—Same objection.

A. I referred to the Brown underreamer.

Mr. BLAKESLEE.—That is all.

Recross-examination.

(By Mr. LYON.)

RXQ. 375. When did you first hear of such Brown underreamer?

A. In 1902, or '3, or '4—all along since then. We always heard that the Baker Iron Works and all the other shops understood that Brown had invented an underreamer, and that some [803] other parties had acquired all his interests for little or nothing—simply cheating him out of it. This was the common talk, and that is about as much as I knew about a Brown underreamer, except for the patent, which I saw as early as 1907 or 1908. 1907 or 1908, I think, was the first time I ever saw any drawing or any sketch or anything that gave me any idea as to what the Brown patent really was, or what the Brown invention really was. I never saw a model of it; I never saw a reamer.

RXQ. 376. You have had Fred W. Jones down here in Los Angeles at your cost and expense for

(Deposition of Elihu C. Wilson.)

some considerable time, now, have you?

Mr. BLAKESLEE.—Objected to as not cross-examination, and calling for a conclusion of the witness.

A. I sent him money to come down here on; yes, sir.

RXQ. 377. (By Mr. LYON.) And have been paying him for his time?

A. I have agreed to pay him a fair wage for his time for getting evidence for us.

RXQ. 378. And how much have you agreed to pay him?

A. I don't know whether there is any definite agreement, I don't remember. He is probably worth about five dollars a day.

RXQ. 379. And you had made that agreement with him prior to the time he gave his deposition in this case, had you? A. No, sir.

RXQ. 380. Had you talked over your agreement with him at the time?

A. I may have made a proposition to him prior to that time, but I had no idea at that time that you were going to subpoena him or use him as a witness.

RXQ. 381. But you had made a proposition prior to that time?

A. I had made him a proposition prior to that time that if [804] he could gather certain evidence together we would be glad to get it. He said, "Well, it will take considerable time." I said, "Well, we will be willing to pay you a reasonable wage for the time you require."

(Deposition of Elihu C. Wilson.)

Mr. LYON.—That is all.

Redirect Examination.

(By Mr. BLAKESLEE.)

RDQ. 382. As a matter of fact, have you or have you not, up to the present time, advanced to said F. W. Jones, directly or indirectly, anything further than money for his actual expenses?

Mr. LYON.—That is objected to as calling for the conclusion of the witness. The witness has declined to state, in dollars and cents, what he has paid Mr. Jones to date.

A. We have paid Mr. Jones a hundred dollars to date.

RDQ. 383. (By Mr. BLAKESLEE.) And, as against that, is he or is he not to render you a statement of what his expenses are and have been for the last ten days or so?

A. Yes, sir; it is understood that that money was to be used in defraying his expenses.

RDQ. 384. And had you made him any proposition as to paying him for his time, or anything more than his expenses in obtaining such evidence as he could for you, prior to the time he testified in this case?

Mr. LYON.—That is objected to, as not the proper method of proof of a conversation, as leading, calling for the conclusion of the witness and not for a statement of fact.

A. No, sir. There was no agreement, or understanding, nor have I ever made any proposal to him to pay anything other than simply his expenses and

(Deposition of Elihu C. Wilson.)

a reasonable wage for what time he is obliged to be away from his ranch.

RDQ. 385. (By Mr. BLAKESLEE.) And has what that reasonable [805] wage or pay for time is to be been agreed upon between you and Mr. Jones?

A. No, sir. I don't believe it has. I would expect to pay him about five dollars a day.

RDQ. 386. Well, to your knowledge, has there been any such agreement?

A. Not to my knowledge has there been any such agreement. If there has been any price mentioned, I don't remember it.

RDQ. 387. Have you given me any instructions of any kind with respect to any such agreement with Mr. Jones?

A. Have I given you any instructions in regard to such?

RDQ. 388. Yes. A. No, sir.

Mr. BLAKESLEE.—That is all.

Mr. LYON.—That is all.

February 23, 1916.

Pursuant to instructions this day from witness Elihu C. Wilson, testifying on behalf of himself, the complainant, I hereby add to his deposition the following:

I do not wish by any of my testimony to have it understood, but quite the contrary, that I ever received any disclosure in any manner of the Jones Underreamer or Underreamers referred to in my deposition, or anything pertaining thereto, prior to

(Deposition of Elihu C. Wilson.)

the invention of my invention covered by the Wilson patent in suit. [806]

Saturday, September 4, 1915, 11 o'clock A. M.

Met pursuant to stipulation and agreement of counsel, at the office of Raymond Ives Blakeslee, 728 California Building, Second and Broadway, Los Angeles, California; present as before.

Deposition of Edward L. Mills, for Complainant (in Rebuttal).

EDWARD L. MILLS, produced on behalf of complainant, in rebuttal, being duly sworn by the Notary Leo Longley, testified as follows in answer to questions put by Mr. Blakeslee:

Direct Examination.

Q. 1. Please state your full name, age, residence and occupation.

A. Edward L. Mills, occupation, president of the Mills Iron Works. Age, forty-seven.

Q. 2. Residence, Los Angeles?

A. Residence, Los Angeles.

Q. 3. What is the general nature of your business, Mr. Mills?

A. Well, we manufacture oil and water well tools. Some special work.

Q. 4. Have you at any time ever manufactured any underreamers for enlarging oil well holes?

A. Yes, sir.

Q. 5. When did you first commence manufacturing any such tool, oil well tool?

A. Well, as nearly as I can remember, about fifteen or eighteen years ago.

(Deposition of Edward L. Mills.)

Q. 6. And have you, off and on, since then, manufactured and repaired such tools?

A. Yes, sir.

Q. 7. Are you acquainted with the construction of underreamers known in the field and market as the Wilson reamer and the Double reamer? [807]

A. Well, I think I am fairly well acquainted with them.

Q. 8. By the Wilson reamer you mean the reamer manufactured by the Wilson & Willard Manufacturing Company, of Los Angeles, California?

A. Yes, sir.

Q. 9. Of which Elihu C. Wilson, the complainant in this case, is the president? A. Yes, sir.

Q. 10. Have you examined Complainant's Exhibit Wilson Reamer in this case?

A. Yes; I have examined it.

Q. 11. Have you examined Complainant's Exhibit Reamer Type "F" in this case? A. Yes, sir.

Q. 12. Please state whether or not, judging by your experience in the manufacture of oil well tools and such familiarity as you may have with oil well tools, this reamer Complainant's Exhibit Reamer type "F" is so constructed that it could be practically operated as a serviceable tool without the detachable block which is formed to fit in at the lower end of the mouth of the reamer; and state your reasons in that respect?

Mr. LYON.—Objected to as incompetent, no foundation laid, the witness not having qualified to answer the question, and as leading, and as irrele-

(Deposition of Edward L. Mills.)

vant and immaterial to the issues of this case.

A. Why, the reamer can be operated without that block, for the reason that without the block there is just as much, if not more, metal in it than there is in the Wilson reamer, that is, speaking of reamers of the same size or for the same size casing.

Q. 13. (By Mr. BLAKESLEE.) What parts of the two reamers, that and the Wilson, do you refer to in your statement that there is as much metal, if not more, present? [808]

A. Well, I refer to that inside ledge, or lug, or whatever you would call it.

Q. 14. And what does that part do in the use of the reamer? Just define it; that is all I want.

A. What is that?

Q. 15. Just define what its purpose is in the reamer.

A. Well, that inside ledge makes more bearing for the cutter.

Q. 16. Will you please point to this ledge you refer to. A. Right here (showing).

Mr. BLAKESLEE.—The witness points to one of the two parallel faces on each of the furcations or prongs at the lower end of the body of the Type F Reamer with which the cutters co-operate or upon which the cutter shoulders rest when the cutters are expanded.

Q. 17. Please similarly state whether or not, judging from your experience and familiarity with underreamers, such ledges as just pointed out by you would or would not, in operation or attempted opera-

(Deposition of Edward L. Mills.)

tion of the reamer, stand up under the strains imposed by the cutters and resist tendencies to shear or crush, without the block being in place, and state your reasons.

Mr. LYON.—Objected to as incompetent, no foundation laid, the witness not having qualified to answer the question, and as leading, and as irrelevant and immaterial to the issues of this case.

A. Well, they would stand up just as well with or without the block. It wouldn't make any difference. Without the ledges are in there there is a little less bearing surface in there; that is all.

Q. 18. (By Mr. BLAKESLEE.) Without what?

A. Without the block and the ledges there is a little less bearing surface. [809]

Q. 19. You mean without the block in addition to the ledges?

Mr. LYON.—Objected to as leading.

A. Yes.

Q. 20. (By Mr. BLAKESLEE.) And what have you to say with respect to the expanding and collapsing actions of the cutters in this Type F. Reamer in comparing the reamer with the block in place with the reamer with the block removed or detached?

A. Why, they would be the same in either case. It bears on the block, and the faces on the reamer there—both of them help to expand the cutters. Either one would expand the cutters.

Q. 21. And what have you, further, to say with respect to the continued use of this reamer with the block as to any effect such use might have upon the

(Deposition of Edward L. Mills.)

block affecting its form or in any way affecting its removal or replacement?

Mr. LYON.—That is objected to as incompetent, no foundation laid, the witness not having qualified to answer the question.

A. I think, from my experience with reamers made with the block in, some years ago, that the reamer would be better off without the block.

Q. 22. (By Mr. BLAKESLEE.) And state your reasons, please?

A. I would state, for the reason that that bolt is not heavy enough to stand the strain of that drilling or jarring caused by the operation of the reamer.

Q. 23. And would that effect take place on the bolt if the block were not on the bolt?

Mr. LYON.—Objected to as leading.

A. Would it take place on the block, you say, or bolt?

Q. 24. (By Mr. LYON.) Bolt.

A. On the bolt.

Q. 25. (By Mr. BLAKESLEE.) Yes. [810]

A. It would to a certain extent; but not much, for the reason that the bolt is not down even with the end of the prongs in the reamer body.

Q. 26. With the block removed would the cutters directly engage the bolt in any action of the reamer?

Mr. LYON.—That is objected to as leading.

A. They would not. They would touch the bolt, though, when in a contracted position.

Q. 27. (By Mr. BLAKESLEE.) And would or would not that be a position occurring when the

(Deposition of Edward L. Mills.)

reamer was being run or operated, actually?

A. It would not. The cutters would not touch the reamer when they were fully expanded—or, would not touch the bolt when fully expanded.

Q. 28. And what can you state would be the effect if any, upon the block, as to its form or shape due to repeated use?

Mr. LYON.—Objected to as incompetent, no foundation laid, the witness not having qualified to answer the question.

A. Well, I believe if the reamer were put into use with that block in there, the block would soon become battered up and have a tendency to spread the reamer and break the bolt.

Q. 29. (By Mr. BLAKESLEE.) Would or would not that affect the block with respect to the getting it out of its position between the prongs or getting it back into that position?

Mr. LYON.—Same objection, and as leading.

A. It would affect the bolt as well as the block, because the bolt would start to shear off and it would be a difficult matter to drive it out.

Q. 30. (By Mr. BLAKESLEE.) And how about the block itself?

Mr. LYON.—Same objection.

A. The block itself could easily be removed by driving it out. [811]

Q. 31. (By Mr. BLAKESLEE.) And how about attempting to replace the block after it had been subjected to long use in a reamer?

Mr. LYON.—Same objections.

(Deposition of Edward L. Mills.)

A. I think after continual use the block would soon become—the hole in the block would soon become so elongated and distorted that it would be impossible to get the bolt in there.

Q. 32. (By Mr. BLAKESLEE.) And how about the faces of the block exposed to wear?

Mr. LYON.—Same objections.

A. The faces of the block would soon become worn off. If the reamer was used long enough it would be worn clear into the bolt.

Q. 33. (By Mr. BLAKESLEE.) And what, if any, effects would be produced by the ends of the block or the parts which directly fit against the prongs?

Mr. LYON.—Same objections.

A. Well, they would be subject to more or less wear.

Q. 34. (By Mr. BLAKESLEE.) And would that have any effect whatsoever upon the ease or possibility of removing the block or replacing it?

Mr. LYON.—Same objection.

A. Yes.

Q. 35. (By Mr. BLAKESLEE.) And what effect?

Mr. LYON.—Same objections.

A. The block would become worn and stretched out and elongated and so it would fit too tight between the prongs.

Q. 36. (By Mr. BLAKESLEE.) And then what effect would that have upon putting the block back in place?

(Deposition of Edward L. Mills.)

Mr. LYON.—Same objection.

A. It would mean refitting the block or putting in a new block. [812]

Q. 37. (By Mr. BLAKESLEE.) Have you, in the course of your experience, repaired underreamers? A. Yes, sir.

Q. 38. And have you ever seen underreamers in operation? A. Yes, sir.

Q. 39. Frequently or— A. Quite often.

Q. 40. And have you examined underreamers after they were withdrawn from the hole?

A. Yes, sir.

Mr. BLAKESLEE.—That is all.

Cross-examination.

(By Mr. LYON.)

XQ. 41. If the block in Type F Reamer is removed and the bits are collapsed, with the spring, mandrel and bits assembled together in the reamer in operative position, what part of the bits would touch the bolt when they are collapsed?

A. I wish to correct my testimony in this regard, upon further inspection of the reamer. There would be no part that would touch the bolt, in that case.

Mr. LYON.—That is all.

Redirect Examination.

(By Mr. BLAKESLEE.)

RDQ. 42. Following your testimony, and particularly with respect to the effects that would occur upon the block incident to long usage, are you prepared to state, one way or the other, whether the reamer would be more serviceable with or without

(Deposition of Edward L. Mills.)

the block applied when the reamer was used?

Mr. LYON.—That is objected to as incompetent, no foundation laid, the witness not having qualified to answer the question. [813]

A. I know that the reamer would be more serviceable without the block.

Mr. BLAKESLEE.—That is all.

Recross-examination.

(By Mr. LYON.)

RXQ. 43. Have you any personal knowledge of any of the use of Complainant's Exhibit Type F Reamer? A. Of the use of it?

RXQ. 44. Yes. A. No; I have not.

RXQ. 45. Save and except, then, as you were called to testify in this case, you have never seen such reamer, have you?

A. I have seen the reamer several times; yes.

RXQ. 46. You never have seen it in use or after it has been used?

A. No. The only reamer I have seen of that type is the reamer here on exhibit.

RXQ. 47. You don't know what have been actually found to be the facts in actual use of this reamer in regard to its use either with or without the block, do you? A. No.

Mr. BLAKESLEE.—This closes the taking of proofs in this case, and the case being on the calendar to be set for final hearing the 7th of the present month, counsel are notified that it will be moved to be set on that day.

Mr. LYON.—Add to that: "and the Notary will

(Deposition of Edward L. Mills.)

have these depositions on file before that time.”

Mr. BLAKESLEE.—They will, probably, provided they can be written and certified. The case will be set, I think.

Mr. LYON.—Demand is made that prior to ten o'clock on [814] September 7, 1915, the proofs in rebuttal on behalf of complainant in this case be filed with the clerk of this court, so that they may be available at that time.

Mr. BLAKESLEE.—We don't know that there is any rule requiring the filing of the proofs in the case if the proofs are completed upon the date on which the case is to be set. But we will assist the notaries in the case in the certifying of such records and filing the same by next Tuesday, if it can possibly be done.

United States of America,
State of California,
County of Los Angeles,—ss.

I, Leo Longley, a Notary Public in and for the County of Los Angeles, State of California, duly commissioned, sworn, and qualified to administer oaths, etc., do hereby certify that the witnesses in the foregoing depositions named, to wit, Elihu C. Wilson, James C. Hubbard, and Edward L. Mills, were by me duly sworn according to law to testify the truth, the whole truth, and nothing but the truth; that the said depositions were taken at the time and place agreed upon by stipulation of solicitors before the respective parties, and pursuant to notices filed herein; beginning on Monday, the 30th day of August, 1915, at the Office of Solicitor for Complainant, 728-30 Cali-

fornia Building, Los Angeles, California, at the hour of 10:15 o'clock A. M., of said date, and thereafter from day to day, to and including Saturday, the 4th day of September, 1915; and that the foregoing is a full, true and correct transcript of the depositions of said witnesses and of the proceedings taken in connection therewith.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal on this 23d day of February, 1916.

[Seal]

LEO LONGLEY,
Notary Public in and for Los Angeles County, State
of California. [815]

[Endorsed]: In the United States District Court, Southern District of California, Southern Division. Elihu C. Wilson, Complainant, vs. Union Tool Company, Defendant. In Equity No. A-4 Consolidated with B-62. Proceedings on Behalf of Complainant, Taken Before Leo Longley, at the Office of Raymond Ives Blakeslee, 728 California Building, Los Angeles, California, Commencing August 30, 1915. Index. Elihu C. Wilson, Direct 618, Cross 652, Redr. 658, 664, Recr. 663; James Crete Hubbard, Direct 641, Cross 644, Edward L. Mills, Direct 666, Cross 672, Redr. 672, Recr. 673. Exhibits: Complainant's Exhibit Copy of Jones U. S. Patent No. 809,570—638; Complainant's Exhibit F. W. Jones Reamer Model Photos—638; Complainant's Exhibit Defendant's Catalog, and particularly pages 28 and 29 thereof—639; Complainant's Exhibit Wilson Unassembled Underreamer Body—640. Filed Feb. 23, 1916.

Wm. M. Van Dyke, Clerk. By Floyd S. Sisk,
Deputy Clerk. [816]

Entered

B. T. P. 336.

Townsend.

**Complainant's Exhibit Wilson Patent—Letters
Patent Issued to E. C. Wilson for Underreamer.**

(Seal) TOWNSEND BROS.

Patents

Los Angeles, Cal.

No. 827,595.

THE UNITED STATES OF AMERICA.

To All To Whom These Presents Shall Come:

WHEREAS, Elihu C. Wilson, of Bakersfield, California, has presented to the Commissioner of Patents a petition praying for the grant of Letters Patent for an alleged new and useful improvement in

Underreamers,

a description of which invention is contained in the specification of which a copy is hereunto annexed and made a part hereof, and has complied with the various requirements of law in such cases made and provided, and

WHEREAS, upon due examination made the said Claimant is adjudged to be justly entitled to a patent under the Law.

Now, therefore, these Letters Patent are to grant unto the said Elihu C. Wilson, his heirs or assigns for the term of Seventeen years from the thirty-first day of July, one thousand nine hundred and six, the exclusive right to make, use and vend the said in-

vention throughout the United States and the Territories thereof.

IN TESTIMONY WHEREOF, I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the City of Washington, this thirty-first day of July, in the year of our Lord one thousand nine hundred and six and of the Independence of the United States of America the one hundred and thirty first.

[Seal]

E. B. MOORE,

Acting Commissioner of Patents. [817]

James Robert Townsend
Patents
Bradbury Block
Los Angeles.

Elihu C. Wilson,
Underreamer,
Dated July 31, 1906.
Patent No. 827,595.

Mailed

Aug. 7, 1906.

James R. Townsend.

Aug. 7, 1906.

Mr. Elihu C. Wilson,
Bakersfield, Cal.

Dear Sir:

I herewith hand you your above entitled U. S. Letters Patent granted and issued to yourself.

Kindly sign the enclosed duplicate receipts and return them to me.

Very truly,

JAMES R. TOWNSEND,

Enclosures:

1—U. S. Patent No. 827,595.

2—Duplicate receipts.

3—Return envelope.

A— [818]

No. 827,595.

PATENTED JULY 31, 1906.

E. C. WILSON.
UNDERREAMER.

APPLICATION FILED NOV 28, 1904.

2 SHEETS—SHEET

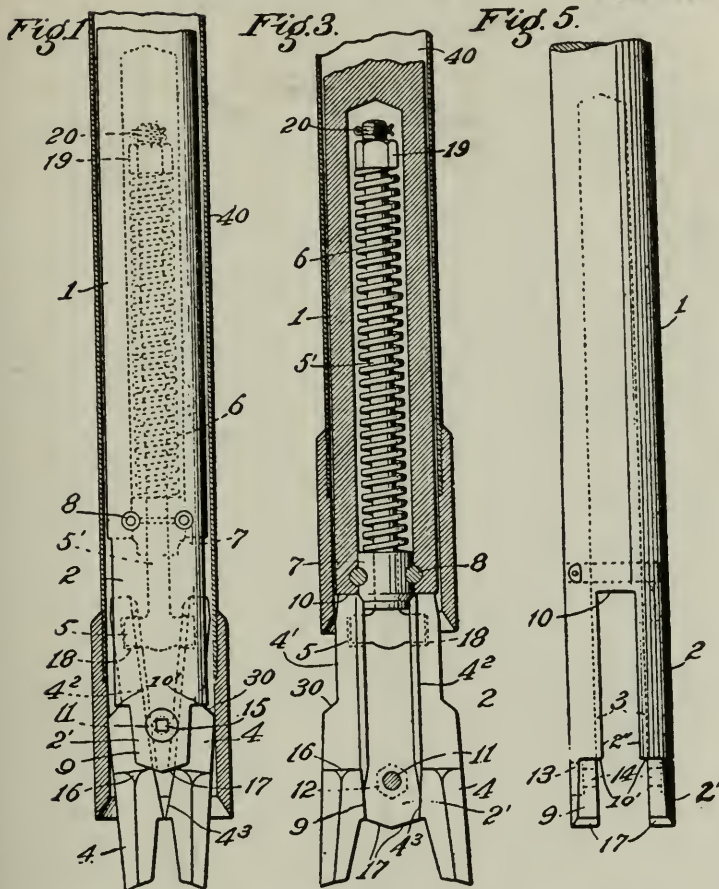


Fig. 2.



Fig. 4.

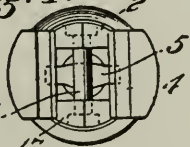
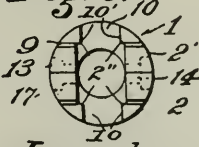


Fig. 6.



Witnesses:

L. C. Holly,
G. J. Williams

Inventor,

Elihu C. Wilson

by James R. Townsend
his atty

No. 827,595.

PATENTED JULY 31, 1906.

E. C. WILSON.
UNDERREAMER.

APPLICATION FILED NOV. 28, 1905.

2 SHEETS—SHEET 2.

Fig. 7.

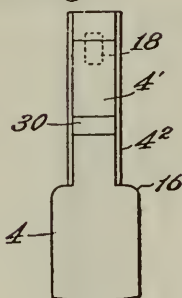


Fig. 8.

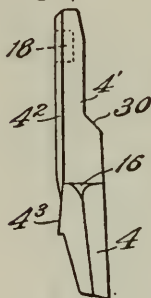


Fig. 9.

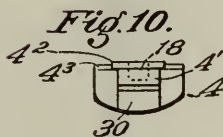
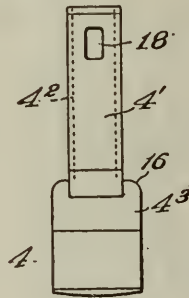


Fig. 11.

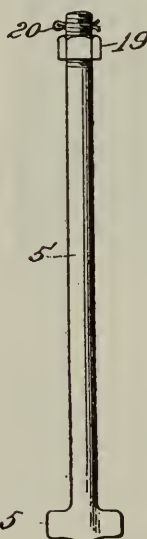


Fig. 12.

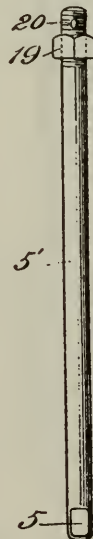
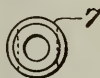


Fig. 13.



Fig. 14.



Witnesses:

b b Holly
b g. Williams

Inventor,

Elihu C. Wilson.

By James R. Townsend
his atty

UNITED STATES PATENT OFFICE.

ELIHU C. WILSON, OF BAKERSFIELD, CALIFORNIA.

UNDERREAMER.

Specification of Letters Patent.

Patented July 31, 1906.

No. 827,595.

Application filed November 28, 1905. Serial No. 289,380.

To all whom it may concern:

Be it known that I, ELIHU C. WILSON, a citizen of the United States, residing at Bakersfield, in the county of Kern and State of California, have invented a new and useful Underreamer, of which the following is a specification.

Objects of this invention are to provide an underreamer of superior strength and of superior width and expansion of cutters so as to enable reaming as great a portion of the circumference of the hole as possible at each stroke, to insure greater safety against losing the cutters from the body while reaming, to avoid the necessity of a middle joint in the mandrel or reamer body, and to leave a maximum open space between the cutters to receive the loose material or sludge at the bottom of the well or other opening during the operation of drilling.

By this invention it is possible to increase the strength of the cross or T which suspends the cutters.

In this invention a cross or T formed of a single forging is provided for suspending the cutters.

Another decided advantage is simplicity and convenience of attaching and removing the cutters and suspending devices from the reamer-body.

Another advantage is facility of collapsing the cutters. I so construct the mouth of the underreamer as to dispense with stock between the collapsed cutters, thus enabling the cutters to close together. This feature makes extreme expansion possible and makes the use of maximum amount of stock in shanks of cutters possible, thus insuring maximum strength of cutters.

The accompanying drawings illustrate the invention.

Figure 1 is a view of the underreamer in a casing just before it has passed through the shoe of the casing, the parts being collapsed. Fig. 2 is a view looking at the bottom of Fig. 1. Fig. 3 is a view of this newly-invented underreamer in a well, the same having just passed through the casing-shoe and expanded for reaming the hole below. Portions are shown in mid-section. Fig. 4 is a view looking at the bottom of Fig. 3. Fig. 5 is a view of the reamer-body at right angles to Figs. 1 and 2. Fig. 6 is a view looking at the bottom of Fig. 5. Fig. 7 is a front view of a cutter detached. Fig. 8 is an edge view of a cutter at right angles to Fig. 7. Fig. 9 is a

view of the inside or back of the cutter. Fig. 10 is a view looking down on the top of the cutter. Fig. 11 is a view of the cross. Fig. 12 is a view of the cross at right angles to Fig. 11. Fig. 13 is a side view of the spring seat-block detached. Fig. 14 is a bottom view of the same.

1 designates a hollow body of an underreamer terminating in prongs 2, forming a fork, said prongs having shoulders 2" on their inner faces to form ways 3 for cutters. Said prongs are provided with and terminate in downwardly-projecting lugs 2' to spread the cutters apart.

4 designates the cutters, which are interchangeable; 4', the cutter-shank; 42, bearing-shoulders of the cutters to engage inside the ways 3; 43, expansion bearing-faces of the cutters on the sides of said cutters.

The inner faces of the prongs 2 are parallel, and the sides or shoulders 2", which form the ways 3, are also parallel. The cutter-shank 4' and its bearing-shoulders 42 are straight—that is to say, the sides or edges thereof are parallel and fit the ways 3.

5 is a cross, 5' the stem of the cross, and 6 the spring which actuates the cross. The parts 5 5' constitute spring-actuated means for actuating the cutters to expand the same.

7 is a block forming a seat for the spring 6. One or more dowel-pins 8 may be provided as means for holding the block or spring-seat 7 in place.

9 designates the spreading bearings for holding the cutters 4 apart, and 10 the down-thrust bearings for the cutters. The down-thrust bearings 10' are in the nature of shoulders formed by the edges of the forks at the base of the lugs 2'. The prongs 2 of the body are of substantially one thickness throughout, excepting that they are reduced at their lower ends to form lugs for spreading the cutters 4 apart. The edges of the lugs 2' for the spreading bearings 9 and the prongs terminate abruptly in the shoulders 10' at the base of the lugs 2'. This construction affords the necessary operative structure with maximum strength for minimum weight of body.

11 is a detachable cross-piece in the form of a bolt secured by a nut 12. 13 is an angular socket in the outer face of one of the forks around the bolt-hole 14 in said fork. The nut 12 is conformed to the angular socket, and the bolt 11 is provided with an angular socket 15 in its head to receive a wrench (not shown) for screwing the bolt into the nut.

The expansion bearing-faces 4³ terminate at their upper ends in rounded corners or bearings 16 to ride more readily over the beveled end faces 17 of the downwardly-projecting lugs 2' to engage said bearings for expanding the cutters.

18 designates recesses in the inner faces of the cutters for engaging the ends of the cross 5.

19 and 20 indicate the usual tension-nut for the spring 6 and the cotter-pin for securing the same.

To assemble the underreamer, the block 7 will first be placed on the stem 5' of the cross 5, and the spring 6 is then adjusted and secured in place by the nut 19 and cotter-pin 20. Then the cutters are placed on the ends, respectively, of the cross 5, which seat in the recesses 18 therefor. Then the parts thus assembled are inserted into the hollow mandrel and brought into the position shown in Fig. 3, whereupon the dowel-pins 8 are inserted and the cross-piece formed of the bolt 11 is then inserted. The nut 12 is placed in its angular socket 13, and the bolt or cross-piece 11 is then screwed home. The underreamer is then in condition for operation.

To use the underreamer, the cutters will be drawn down below the downwardly-projecting lugs 2', thus collapsing the same into the position shown in Fig. 1, whereupon the underreamer will be inserted into the pipe or casing in the usual manner and allowed to descend. When it has passed through the shoe, as shown in Fig. 3, the spring operates in the usual manner to draw the cross 5 up, thus bringing the cutters into the expanded position shown in Fig. 3. The rounded shoulders 16 ride readily over the beveled faces 17, and the upper ends of the cutters seat against the downthrust bearings 10, and the bearing-shoulders 4² of the cutters engage the ways 3 of the fork prongs or members 2, thereby being solidly held during the operation of underreaming. The spreading bearings 9 of the lugs 2' engage the expansion bearing-faces 4³ of the cutters at the same time, so that the tool is practically a unit during the operation of underreaming.

30 designates the usual shoulders on the cutters for drawing the same in when the tool is removed through the pipe or casing 40.

It is advisable that the lower ends of the forks should not form downthrust bearings for the cutters, as there would otherwise be a tendency of crystallization of said forks, which is avoided by making the downthrust bearings at 10 only.

The cross-piece 11 serves as a brace for the prongs of the fork and prevents accidental removal of the cutters and T or cross 5.

It is to be noted that by the construction shown the cutters are quickly expanded at the initial upward movement of the same

after escaping the shoe of the casing 40, and that immediately thereafter the cutters are solidly held in the straight and parallel ways 3, and that when the cutters are fully drawn up they seat on the downthrust bearings 10 and the spreading bearings 9, while the shanks are rigidly held throughout their length. Said spreading bearings are on the lugs 2', which constitute wedges for wedging the cutters apart, and said bearings are at the sides of the lower ends of the body, thus engaging the outer edges of the cutters to hold the cutters apart and leaving an open space between the middle portions of the cutters for a greater distance upward from the lower ends of the cutters than would be the case were the cutters held apart by any intermediate portion between the lugs.

I term the cutters "shouldered cutters," for the reason that the rounded corners 16, which extend away from the shank at right angles thereto, are in the nature of shoulders, the inner faces 4³ of which engage the spreading faces 9 of the side lugs 2' to brace the cutters and hold them apart.

What I claim is—

1. An underreamer-body terminating in prongs having projecting lugs at their lower ends with spreading bearings 9 for holding the cutters apart.

2. An underreamer-body terminating in prongs and provided with upper and lower bearings for the cutters, said prongs having projecting lugs, the edges of which form lower bearings for holding the cutters apart, and the ends of said lugs having beveled end faces.

3. An underreamer-body terminating in prongs the inner faces of which are provided with straight parallel ways, the ends of said prongs terminating in lugs below said ways to spread and hold the cutters apart.

4. An underreamer-body terminating in prongs forming a fork, said prongs having shoulders on their inner faces to form ways for the cutters.

5. A hollow underreamer-body terminating in prongs forming a fork having shoulders on the inner faces to form ways for the cutters, cutters in said ways, a cross in said hollow body for operating said cutters, a spring for operating the cross, a block in the body to form a seat for said spring, and one or more dowel-pins securing the block in place.

6. A hollow underreamer-body, cutters, a cross inside the hollow body for operating said cutters, a spring for operating said cross, a block in said body forming a seat for said spring, and one or more dowel-pins for holding the block in place, said block and pins being located entirely above the head of the cross.

7. A hollow underreamer-body terminating in prongs forming a fork and provided with ways and downthrust bearings for cut-

ters, cutters in said ways engaging said bearings, a cross for operating said cutters, a spring for actuating said cross, a block forming a guide for the stem of the cross and a seat for the cross-actuating spring, its lower end terminating above the head of the cross and projecting below the downthrust bearings to hold the upper ends of the cutters apart, and means for holding the block in the reamer-body.

8. A hollow underreamer-body terminating in prongs forming a fork, said prongs having shoulders on their inner faces to form ways, cutters in said ways, means for operating the cutters, and a detachable cross-piece connecting the ends of the fork.

9. An underreamer-body terminating in prongs forming a fork and provided with shoulders on the inner faces of the prongs which form cutter-ways and terminate in downwardly-projecting lugs, and cutters mounted between the prongs of said fork and having shoulders inside the fork and faces to bear on the projecting lugs.

10. An underreamer-body terminating in prongs having projecting lugs at their lower ends to hold the cutters apart.

11. An underreamer-body terminating in prongs forming a fork having beveled faces at the ends of its prongs, cutters having shoulders to ride over said beveled faces, and means for suspending said cutters in said body.

12. An underreamer-body terminating in prongs forming a fork, the ends of said prongs being provided with lugs to spread the cutters apart.

13. An under-reamer-body terminating in prongs forming a fork, said prongs having shoulders on the inner faces to form ways for the cutters, and said prongs terminating in lugs to act, as spreaders for the cutters.

14. A hollow underreamer-body terminat-

ing in prongs forming a fork, said prongs terminating in lugs for spreading the cutters, said lugs having beveled ends to engage bearings on cutters to expand cutters.

15. An underreamer-body terminating in prongs forming a fork, said prongs terminating in lugs or projections, said lugs having beveled faces or bearings to expand the cutters, and also faces or bearings for the cutters to rest on after they have expanded to a normal position for reaming.

16. An underreamer-cutter having two shoulders and a bearing-face on the inner side of each of the two shoulders of the cutter.

17. An underreamer-cutter having a shank and a shoulder on either side of the shank of the cutter, each of said shoulders projecting at right angles to the shank of the cutter and having a bearing-face on its inner side.

18. An underreamer having a body terminating in a fork, and cutters suspended between the prongs of the fork, the ends of said prongs constituting wedges to wedge between the cutters.

19. An underreamer comprising a body terminating in two prongs, and cutters each having two shoulders and a bearing-face on the inner side of each of the two shoulders to engage said prongs.

20. An underreamer comprising a body terminating in prongs the inner faces of which are provided with straight parallel ways, and cutters having straight shanks fitting said ways, the ends of said prongs terminating in lugs below said ways to spread and hold the cutters apart.

In testimony whereof I have hereunto set my hand at Bakersfield, California, this 20th day of November, 1905.

ELIHU C. WILSON.

In presence of—

H. I. TUPMAN,

T. E. KLOPSTEIN.

[Endorsed]: 715. U. S. District Court, Southern District of California, Southern Division. Wilson vs. Union Tool Co. In Equity, A-4. Complainant's Exhibit Wilson Patent. Los Angeles, Cal., March 24, 1914. I. Benjamin, Notary Public. [819]

Defendant's Exhibit Double Patent No. 2—Letters Patent Issued to E. Double for Underreamer.

No. 748,054

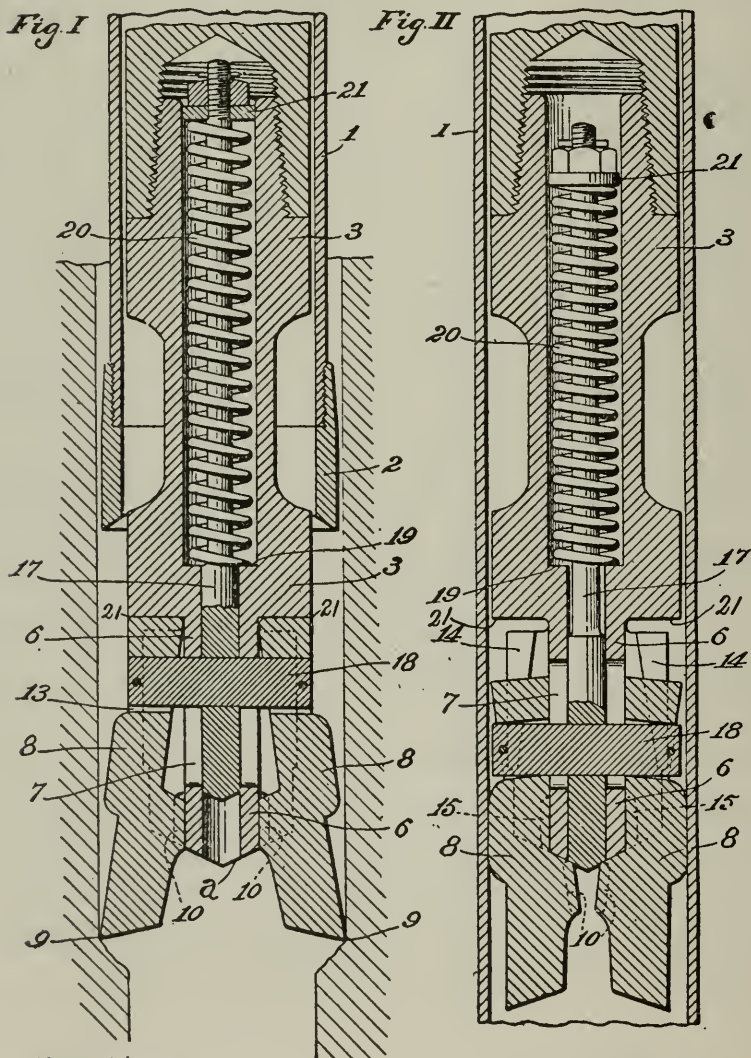
PATENTED DEC. 29, 1903

E. DOUBLE.
UNDERREAMER.

APPLICATION FILED OCT. 13, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
C. C. Holly
G. T. Hackley

Inventor
Edward Double
G. T. Townsend, Jr.
attorney

No. 748,054.

PATENTED DEC. 29, 1903.

E. DOUBLE.
UNDERREAMER.

APPLICATION FILED OCT. 13, 1902

NO MODEL.

2 SHEETS—SHEET 3.

Fig. III

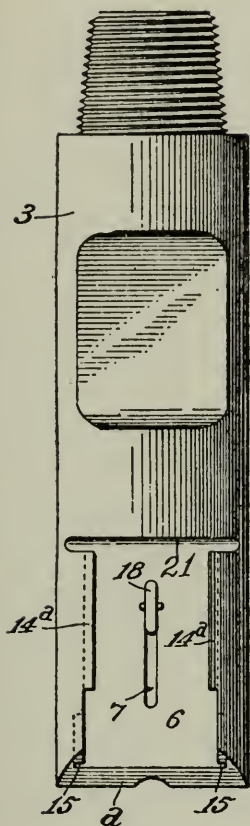


Fig. IV

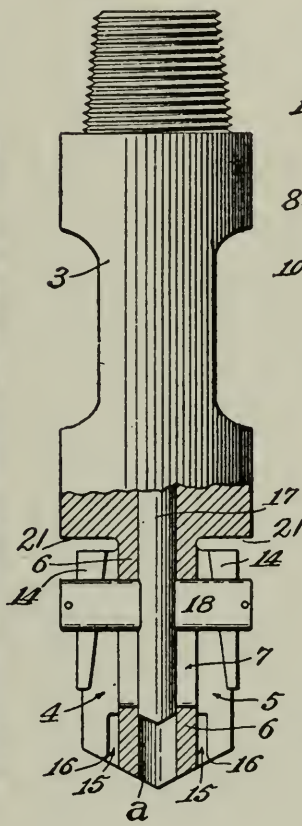


Fig. V

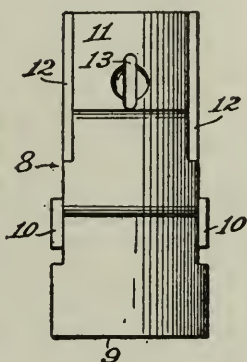
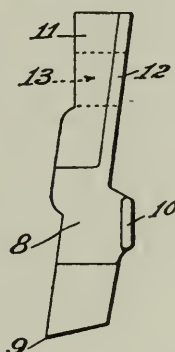


Fig. VI



Witnesses
C. C. Holly
G. T. Hackley

Inventor
Edward Double
by Townsend Bros.
his attys

Patented December 29, 1903

No. 748,054.

UNITED STATES PATENT OFFICE.

EDWARD DOUBLE, OF LOS ANGELES, CALIFORNIA.

UNDERREAMER.

Specification forming part of Letters Patent No. 748,054, dated December 29, 1903.

Application filed October 13, 1902. Serial No. 127,171. (No model.)

To all whom it may concern:

Be it known that I, EDWARD DOUBLE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Underreamers, of which the following is a specification.

This invention relates to underreamers, and particularly to that class of underreamers described in my application filed October 26, 1901, Serial No. 80,144, and has for its object the further improvement of such underreamers, and particularly the minimizing the liability of the slips or reaming-bits breaking, due to the localization of the strain thereon upon weakened portions.

In operating underreamers considerable difficulty has been experienced, caused by the slips breaking. This was due primarily to the manner in which the slips were attached to the mandrel, the usual construction being to attach the slips by means of a key connected to their upper ends. The slips were usually slotted at their upper ends to receive the key, and therefore were weak at this point and very apt to break, inasmuch as this weak point was situated at the end farthest away from their cutting edges. The strains undergone by the slips were such as to tend to spread the slips apart and owing to the great leverage produced by the length of the slip between its weak portion where it was supported and its cutting edge were frequently broken.

Another object of my invention is to provide for strengthening the slips at a point as near their cutting edges as possible, so as to relieve the weak portion of as much stress as possible.

A further object is to combine such strengthening means with such mandrel and reaming bits or slips in simple, cheap, and durable manner, avoiding increase in number of parts and the production of devices requiring close fit or adjustment.

To these ends my invention consists in the constructions and combinations of parts hereinafter described, and particularly pointed out in the claims.

Referring to the drawings, Figure I is a longitudinal sectional view showing an underreamer embracing my invention in oper-

ative position in a well-casing, the well-casing being shown in place. Fig. II is a view similar to Fig. I, showing the cutting ends of the slips drawn together and the underreamer entirely within the well-casing. Fig. III is a side elevation of the mandrel. Fig. IV is a view looking at the side of Fig. III, the lower part of the mandrel being in section. Fig. V is a front elevation of the slip. Fig. VI is a side elevation of the slip.

1 designates the ordinary well-casing, to the bottom of which is screwed a shoe 2.

3 is a hollow arbor provided at its lower end with opposite recesses 4 and 5, which are separated by a web 6, which is provided with a central elongated slot 7. The lower end of the arbor is formed with a blunt tapering point *a*. The tapering under faces of this point *a* form the spreading-surfaces for tilting the bits, and the straight parallel sides thereof form the surfaces against which the bits rest when in position for underreaming.

8 designates slips which lie in the opposite recesses 4 and 5. The bottom of each slip is inclined to form a cutting edge 9. Each slip is provided with a pair of elongated lugs 10, which lie as near the cutting edge as possible and extend longitudinally of the slip and project laterally from the sides thereof, as shown best in Fig. V. The opposite sides of the upper end of each slip is provided with a ridge 12, which extends substantially longitudinally of the slip, but at an angle to the line of the lug 10. Each slip is also provided at its upper end with a lateral slot 13, which slot, as shown, is somewhat larger than the end of the key 18 to permit the slip or bit to tilt thereon, as illustrated in the drawings.

Referring to Fig. III, 14 designates a pair of opposite elongated lugs. The inner face of each lug converges at its upper end toward the web 6. A pair of lugs 14^a is provided on the opposite side of the mandrel. The lower end of the mandrel is provided on each side of the web 6 with a pair of opposite grooves 15, which lie close to and parallel with the web 6, the lower outside corner of each groove 15 being slightly rounded, as at 16. The grooves extend up the mandrel a short distance only. 17 is rod which extends through the center of the mandrel and having a pointed lower end. The rod is provided at a short

748,054

distance from its lower end with a slot, through which a key 18 passes. The hollow mandrel 3 is provided with an internal shoulder 19. 20 is a coil-spring which lies within the hollow mandrel, encircling the rod 17 and its lower end resting upon the shoulder 19. The upper end of the rod is provided with a washer and nut 21, which confines the upper end of the spring. The slips or reaming-bits lie in the opposite recesses 4 and 5, and the key 18 passes through the perforations 13 in each slip. The function of the spring 20 is to hold the rod 17 in a raised position, as shown in Fig. I, with the slips tilted into operative position, their upper ends resting against the upper faces of the recesses 4 and 5. When the slips are in this position, the lugs 10 lie within the grooves 15, and the slips are thus firmly held and prevented from spreading outwardly and the strain upon the weaker part of the slips reduced. The upper portions or ends of the slips or bits when in position for underreaming bear against the shoulders or abutments 21 of the arbor or mandrel 3 above the recesses 4 and 5. These abutments 21 have sufficient stock to withstand the severe strain thereon when the tool is in use in underreaming.

When it is desired to insert the underreamer into the well-casing, the rod 17 may be depressed, thereby compressing the spring 20 and dropping the slips over the lower end of the web 6, which allows the slips to be tilted, so that their cutting edges are drawn together a sufficient distance to allow the underreamer to be inserted into the pipe. When the slips are in the position shown in Fig. I, the ridges 12 of the slips contact with the inclined faces of the lugs 14, which serves to hold the upper end of the slips from dislodgement and also relieving the key from any appreciable strain, as the stresses are borne almost entirely by the lugs 10 and ridges 12 and also, of course, by the top end of each slip, which bears against the upper faces of each recess 4 and 5.

The lower end of each groove 15 is slightly rounded to allow the lugs 10 to readily enter without danger of catching upon the corner. For the same reason each end of the lug 10 is also preferably rounded, as shown in Fig. VI.

It should be understood that I contemplate making such changes and alterations in the specific construction of my invention as would be included within the scope of the claims.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In an underreamer, the combination, with a hollow mandrel, of a spring-actuated rod slidably mounted therein and provided with a key or head at its lower end, tilting slips freely and detachably connected with said key or head, and means bracing said slips at the lower end of the mandrel.

2. In an underreamer, the combination, with a hollow mandrel, of a spring-actuated rod slidably mounted therein and provided

with a key or head, slips or bits tiltingly carried thereby, means for spreading said bits as the same are drawn up by said rod, and means bracing said slips at their lower ends.

3. In an underreamer, the combination, with a mandrel provided with a central bore, a central depending bar having spreading-faces at its lower end, and shoulders against which the upper ends of the slips bear when in position for underreaming, of a spring actuated rod slidably mounted in said bore and provided with a key or head, reaming-slips tiltingly carried thereby, and means bracing said slips at their lower ends.

4. In an underreamer, in combination, a hollow mandrel, provided with a slotted extension, a spring-actuated slip-operating rod provided with a key, tilt slips or bits provided with key-seats to be engaged by said pivot-key, said key-seats being somewhat larger than the key to allow the slips to tilt, said slips provided with inwardly-projecting shoulders, said slotted extension provided with surfaces adapted to tilt said slips and hold the same in expanded position, and means bracing said slips at their lower ends.

5. In an underreamer, in combination, a hollow mandrel with a hollow slotted extension, said extension having opposite parallel bearing-faces, a slip-carrying rod in said mandrel, reaming-slips, said slips being provided with key-seats, a key or head on said rod, each end of said head or key lying in a key-seat, and the key-seat in said slip being somewhat larger than the key to allow the slips to partake of a tilting action, and means bracing said slips at their lower ends.

6. In an underreamer, in combination, a mandrel furnished with a hollow slotted extension, the lower end of which slopes upward at the edges, tilt-slips slidably connected with the mandrel and furnished on their inner faces with projections, the faces of which slide upon the extension of the mandrel, a spring-actuated rod slidably arranged in said mandrel, means connecting the slips with the rod, and means for bracing the slips at their lower ends.

7. In an underreamer, in combination, a mandrel, provided with a centrally-depending transversely-slotted bar or web and with spreading-faces at its lower end, reaming-slips, means for bracing the slips at their lower ends in said slotted extension, and automatic means for tiltingly carrying and supporting said slips independently of each other adapted to normally hold said slips in position for underreaming.

8. In an underreamer, in combination, a hollow mandrel, provided with a slotted extension, a spring-actuated rod slidably mounted therein, a key or head provided on said rod, expandible reaming-slips tiltingly carried upon and operated by said key, spreading-faces on said mandrel against which said bits operate, and means preventing the

lower ends of the bits tilting outward from their operative position after such bits have been drawn up by said rod.

9. In an underreamer, in combination, a
5 hollow mandrel provided with a slotted extension, a spring-actuated rod slidably mounted therein and provided with a slip carrying and operating key or head, expansible reaming-bits tiltingly carried thereby and provided
10 with inwardly-projecting shoulders, and mandrel provided with spreading-faces, and means on said slips cooperating with means on said mandrel, when said slips are in position for underreaming, to hold the lower ends
15 of said slips from tilting.

10. In an underreamer, in combination, a hollow mandrel provided with a slotted extension, a spring-actuated rod slidably mounted therein and provided with a slip carrying and operating key or head, expansible reaming-bits tiltingly carried thereby and provided
20 with inwardly-projecting shoulders, said mandrel provided with spreading-faces, the lower end of said mandrel provided with elongated grooves, and said slips provided with elongated lugs projecting into said grooves.

11. In an underreamer, in combination, a hollow mandrel provided with a slotted extension, a spring-actuated rod slidably mounted therein and provided with a slip carrying and operating key or head, expansible reaming-bits carried thereby and provided with inwardly-projecting shoulders, said mandrel
30 provided with spreading-faces, said mandrel provided at its lower end with a pair of opposite recesses, a pair of elongated lugs on the lower end of said mandrel projecting over a portion of each side of the recess, the extreme lower end of said mandrel being provided with opposite pairs of grooves, each of
40 said slips provided with ridges which lie against said lugs, and a pair of lugs on each slip projecting into said grooves.

12. In an underreamer, in combination, a
45 hollow mandrel provided with a transversely-slotted extension, a spring-actuated rod slidably mounted therein, a key or head provided on said rod playing in said transverse slot, expansible reaming-slips tiltingly-carried upon and operated by said key, spreading-faces on said mandrel against which said
50 bits operate, said mandrel provided at its lower end with a pair of oppositely-positioned open-ended grooves, and each of said slips provided with lugs projecting into said
55 grooves.

13. In an underreamer, the combination, with a hollow mandrel provided with spreading-surfaces, of a spring-actuated slip-carrying rod slidably mounted therein and provided
60 with a slip-carrying key or head, slips pivotally mounted upon and carried by said key or head and having portions adapted to contact with said spreading-surfaces, and means bracing said slips at their lower ends.

14. In an underreamer, the combination, with a hollow mandrel provided at its lower

end with spreading-surfaces and provided with abutments, of a spring-actuated slip-carrying rod slidably mounted therein and
70 provided with a slip-carrying key or head, slips pivotally mounted upon and carried by said key or head, said slips provided with portions adapted to contact with said spreading-surfaces and with portions to contact with
75 said abutments when the slips are in position for underreaming and means for bracing the slips at their lower ends.

15. In an underreamer, the combination, with a hollow mandrel provided at its end
80 with spreading-surfaces and provided with abutments and with elongated lugs, and a slotted extension, of a spring-actuated rod slidably mounted therein, a key or head on said rod, slips or bits tiltingly mounted upon
85 and carried by said key or head, said slips provided with portions adapted to contact with said spreading-surfaces and with portions to contact with said abutments when the slips are in position for underreaming and
90 with portions adapted to contact with said elongated lugs, and means for bracing said slips and preventing the same tilting outward when in position for underreaming.

16. In an underreamer, the combination,
95 with a hollow mandrel provided with a slotted extension, said mandrel provided with elongated lugs and spreading-surfaces, a spring-operated member slidably mounted in said mandrel, a key or head for said rod, reaming-bits tiltingly mounted on said key or head
100 and carried thereby, said bits provided with portions adapted to contact with said lugs, and means for bracing said slips and preventing the same tilting outward when in position
105 for underreaming.

17. In an underreamer, in combination, a mandrel furnished with shoulders or abutments and with a slotted extension beyond
110 said shoulders or abutments and with dovetail ways on opposite sides of said extension, dovetail tilt slips or bits for said ways furnished with transverse perforations or seats;
115 a spring-actuated rod sliding in said mandrel and furnished with a key or head, the ends of which project into said perforations or seats, said slotted extension provided with grooves and said bits or slips provided with lugs or
120 projections adapted to engage in said groove when in position for underreaming thereby bracing said bits or slips against lateral strain, and means at the lower end of said slotted extension for spreading the bits or slips.

18. In an underreamer, dovetail slips furnished with key-seats respectively on their
125 inner faces; a rod furnished with a key-seat; a key for said key-seats; a mandrel in which the rod plays constructed with a slotted extension and tapering dovetail slipways which open laterally just above the lower end of the
130 bottom of the slot in the extension, to allow the key to be inserted in the slot and key-seats only when the key-seats are flush with the lower end of the slot, said slotted extension

748,054

sion provided with grooves, and said slips provided with lugs or projections adapted to engage in said grooves when in position for underreaming thereby bracing said bits or slips against lateral strain.

19. In an underreamer, in combination, a hollow mandrel provided with abutments and with a slotted extension projecting below said abutments and provided with opposite recesses, a spring-actuated rod slidably mounted in said mandrel and provided with bit or slip carrying means, reaming bits or slips tiltingly carried by said means and adapted to bear against said abutments, each of said bits provided with ridges adapted to work in respective recesses, said slotted extension provided with bit or slip spreading means and with grooves or slots, said bits or slips provided with portions adapted to engage in said grooves or slots when the bits are in position for underreaming.

20. In an underreamer, in combination, a

hollow mandrel provided with a slotted extension having opposite recesses, a spring-actuated rod slidably mounted in said mandrel and provided with bit or slip carrying means, reaming bits or slips tiltingly carried by said means, each of said bits or slips provided with ridges adapted to work in respective recesses, said slotted extension provided at its end with spreading-surfaces and with grooves or slots, said bits or slips provided with lugs or projections adapted to engage in said grooves or slots when the bits are in position for underreaming

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Los Angeles, in the county of Los Angeles and State of California, this 4th day of October, 1902.

EDWARD DOUBLE.

Witnesses:

JAMES R. TOWNSEND,
A. E. WROTH.

[Endorsed]: Double 748,054. U. S. Dist. Court, Southern Dist. of Cal., Southern Division. Wilson v. Union Tool Co. In Equity, A-4. Defendant's Exhibit Double Patent No. 2. July 23, 1915. I. Benjamin, Notary Public. Double No. 2. For Mr. Lyon. [820].

Defendant's Exhibit Double Patent No. 3—Letters Patent Issued to E. Double for Underreamer.

No. 796,197.

PATENTED AUG. 1, 1905.

E. DOUBLE.
UNDERREAMER.

APPLICATION FILED DEC. 18, 1902.

3 SHEETS—SHEET 1

Fig. I

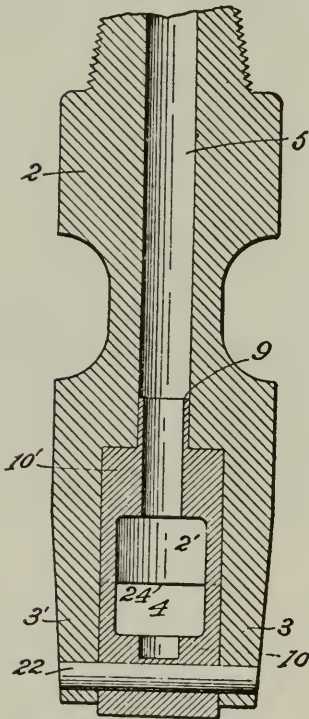


Fig. II

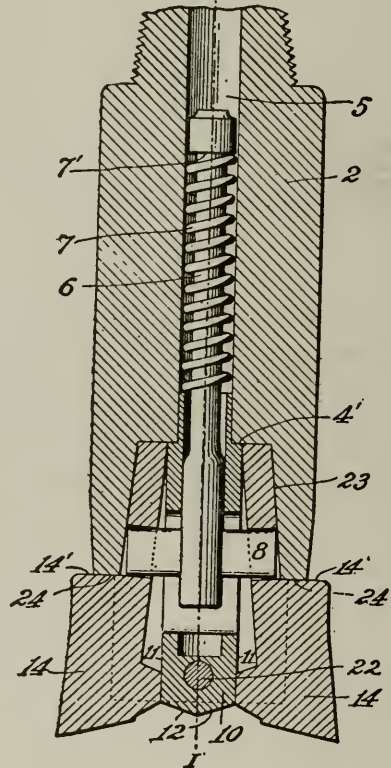
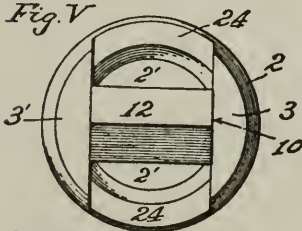


Fig. V



Witnesses
C. C. Kelly
Frederick J. Ryan

Inventor
Edward Double

[Signature]
Townsend & Co.
his atty.

No. 796,197.

PATENTED AUG. 1, 1905.

E. DOUBLE.

UNDERREAMER.

APPLICATION FILED DEC. 18, 1902.

3 SHEETS—SHEET 1.

Fig. III

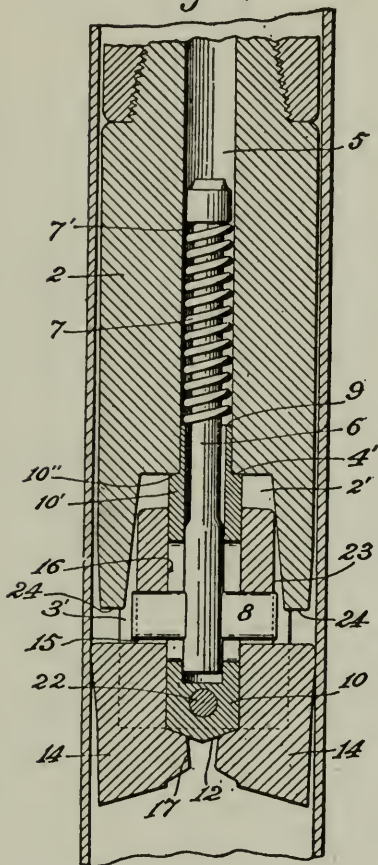


Fig. IV

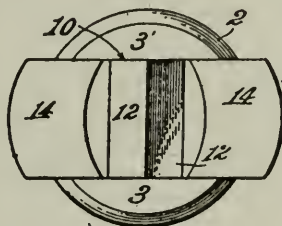
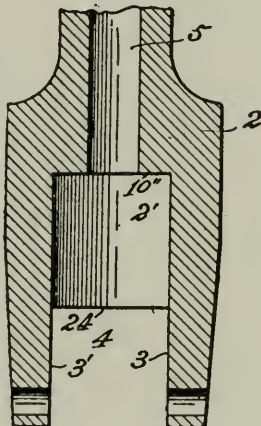


Fig. VI



Witnesses
C. B. Kelly.
Frederick J. Ryan

Inventor
Edward Double
by Townsend Bros.
his Atty

UNITED STATES PATENT OFFICE.

EDWARD DOUBLE, OF LOS ANGELES, CALIFORNIA.

UNDERREAMER.

796,197.

Specification of Letters Patent.

Patented Aug. 1, 1905.

Application filed December 18, 1902. Serial No. 135,792.

To all whom it may concern:

Be it known that I, EDWARD DOUBLE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles, and State of California, have invented certain new and useful Improvements in Underreamers, of which the following is a specification.

This invention relates to means for reaming out or increasing the bore of oil or Artesian well holes, and particularly to a device adapted to be passed through the well-casing and ream out or enlarge the bore of the well below the casing, so that the casing may be readily lowered.

The object of the invention is to provide a device of this class which shall be extremely simple and cheap in construction and positive and efficient in operation.

The invention consists generally in an underreamer comprising in combination a mandrel or body portion, said portion provided with a slotted extension having open sides and with a central bore, a removable cap or end block forming a central bar or bridge extending across the center of said slotted portion, said bar or bridge provided with lower faces downwardly and inwardly converging and forming a spreading portion, an automatic spring-actuated, slip-operating rod slidably mounted in said center bore of the mandrel and provided with a key or head, and reaming-bits adapted to extend into the slotted extension through the open sides thereof and provided with key-seats into which the ends of said keys or head are adapted to engage, said key-seats being somewhat larger than the ends of the key or head to permit the bits or slips to tilt or swing thereon and said bits provided with shoulders or portions adapted to extend inwardly to contact with the converging face of said bar or bridge.

The invention consists, further, in a mandrel having a center bore, a central socket or chamber, and an open-ended open-sided hollow extension through which portions of the bits extend up into said central socket or chamber and bear against the inner walls thereof; further, in utilizing the wall portions forming the upper ends of said side slot as abutting surfaces against which shoulders on the bits are adapted to bear.

The invention consists, further, in the constructions and combinations of parts herein-after described, and particularly pointed out in the claims and will be more readily understood by reference to the accompanying draw-

ings, forming part of this specification, in which—

Figure I is a longitudinal sectional view of an underreamer embodying my invention, taken on line I I of Fig. II, the reaming-bits having been removed, the end block or bridge being shown in place. Fig. II is a longitudinal sectional view thereof as the same appears when ready for underreaming. Fig. III is a similar view as the same appears as the tool passes through the casing. Fig. IV is an under side view showing the bits in the position of Fig. II. Fig. V is an under side view, the bits having been removed. Fig. VI is a partial longitudinal sectional view similar to Fig. I, showing the end block or bridge removed.

As shown in the drawings, 2 represents the mandrel or body portion, which is provided with a central socket or chamber 2' and with a slotted extension having the walls 3 3' and open-sided slot 4. The body portion 2 is also provided with the central bore 5, in which the slip operating and carrying rod 6 is adapted to slide. This rod is encircled by a coiled spring 7, one end of which bears against the shoulder of spring-seat 7' on the rod 6, the other end bearing against the upper end of the end block 10. It is thus seen that the rod 6 is normally held in a raised position. The rod 6 is provided with a key or head 8, either integral or detachable, as desired. The end of the slot 4 is closed by a cap or end block 10, forming a central bar or bridge, having parallel sides 11 and downwardly and inwardly converging or tapered faces 12, 12. As shown, this end block 10 is provided with the hollow upward extension 10', extending up within the central bore 4, the shoulder 4' abutting against the shoulder 10". The portion 10 is cut away at its center in a long slot, thus forming an unobstructed open-sided chamber in which the key or head 8 and the bits play. This end block 10 is secured on the end of the walls 3 3' by a pin or key 22.

14 represent the reaming bits or tools. The bits are each provided with a key seat or socket 15, an inner inclined face 16, and an inward projection, surface, or shoulder 17. The key seats or socket 15 are somewhat larger than the ends of the key or head 8.

The operation is as follows: The device being in the position shown in Fig. III, as passing through the casing, as soon as the bits pass out the end of the casing the rod 6 is forced upward by the tension of the spring 7

and the reaming-bits drawn upward. The shoulders or portions 17 of the bits ride up the inclined faces of the spreading bar or end block 10, the key seats or sockets 15 permitting the bits to tilt on the key or head 8. The shoulders or surfaces 17 being brought up onto the straight sides of the bar or end block 10, the bits are held expanded. When it is desired to withdraw the underreamer from the well-casing, the rod 6 being thereby drawn surfaces of the bits strike against the shoe of the well-casing, the rod 6 being thereby drawn down against the tension of the spring. As soon as the shoulders or surfaces 17 pass downward far enough on the sides 11 of the central bar or bridge 10 to reach the tapered surfaces 12 the bits will tilt until they are again in the position shown in Fig. III, when they pass freely through the casing.

I make the key seats or sockets 16 somewhat larger than the ends of the key or head 8, so that the lower ends of the bits or slips may tilt away from the bar or bridge 10 in expanding or tilt toward such bar or bridge when the shoulders or surfaces 17 pass downward far enough to slide inward on the converging spreading faces 12 of the bar 10.

It will be noted that the upper ends of the bits come within the socket or chamber 2', and when in position for reaming the outer faces 23 of the bits engage the inner surfaces of the chamber-walls, and the shoulders 14' of the bits or slips contact with the portions 24 of the mandrel. The portions 24 thus form abutting surfaces for the shoulders 14' of the reaming-bits. It will also be noted that the sides of the bits bear against the side walls of the slot 4, the walls forming guides preventing lateral play of the bits.

Having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In an underreamer, in combination, a mandrel provided with a central bore and with an open-sided slotted extension, a removable end block or bridge adapted to be secured to the ends of said slotted extension, and having downwardly and inwardly converging faces and side bearing-surfaces, a spring-actuated rod slidably mounted in said central bore, the lower end of said rod provided with a key or head, and reaming-bits having key-seats somewhat larger than said key or head into which said key or head is adapted to extend, and said bits provided with tilting surfaces or shoulders adapted to contact with said converging faces on said central bar or bridge and to bear on said side bearing-surfaces when the bits are expanded.

2. In an underreamer, the combination, a mandrel provided with a central bore and with an open-sided slotted extension, an end block or bridge portion and forming a central bar or bridge having spreading faces on its under side and bearing-surfaces on its sides, a spring-

actuated slip-operating rod slidably mounted in said central bore, and provided with a bit-engaging key or head, and reaming-bits provided with key-seats somewhat larger than said key or head into which said key or head is adapted to extend, said bits provided with tilting surfaces or shoulders adapted to move against said spreading faces and bear on said bearing-surfaces of said central bar when expanded and said bits provided with portions above said bearing-surfaces adapted to permit said bits to tilt inward when said rod is drawn down, so that said bits may tilt inward.

3. In an underreamer, in combination, a mandrel provided with a central bore and with an open-sided slotted extension, a removable end or bridge block secured on the ends of said slotted extension and forming a central bar or bridge having downwardly and inwardly converging faces and side bearing-surfaces, a spring-actuated rod slidably mounted in said central bore, the lower end of said rod provided with a key or head, and reaming-bits having key-seats somewhat larger than said key or head into which said key or head is adapted to extend, and said bits provided with tilting surfaces or shoulders adapted to contact with said converging faces on said central bar or bridge and to bear on said side bearing-surface when the bits are expanded, the width of said slips adapting the lateral faces thereof to bear against the side walls of said slotted extension thereby preventing lateral movement of the slips.

4. In an underreamer, the combination, a mandrel provided with a central bore, and with an open-sided slotted extension, a removable end block or bridge secured on said slotted extension, said end block or bridge having spreading faces on its under side and bearing-surfaces on its sides, a spring-actuated slip operating rod slidably mounted in said central bore, and provided with a bit-engaging key or head, and reaming-bits provided with key-seats somewhat larger than said key or head into which said key or head is adapted to extend, said bits provided with tilting surfaces or shoulders adapted to move against said spreading faces and bear on said bearing-surfaces of said central bar when expanded, and said bits provided with portions above said bearing-surfaces adapted to permit said bits to tilt inward when said rod is drawn down, the width of said slips adapting the lateral faces thereof to bear against the side walls of said slotted extension thereby preventing lateral movement of the slips.

5. In an underreamer, the combination with a slotted mandrel provided with a downwardly-projecting open-ended slotted or chambered extension, an end portion detachably secured thereon and provided with a central bar or bridge extending over the center of said slot and provided with spreading faces, a spring-actuated rod slidably arranged in

said slotted mandrel and having its lower end extending into the slot or chamber of said extension and provided with a key or head, and reaming-bits provided with key-seats or sockets somewhat larger than the ends of said key into which said key extends, said bits provided with portions adapted to operate against said faces, and with surfaces to bear against the well-casing to tilt said bits inward and with side faces adapted to slide against the side walls of said slotted or chambered portion and prevent lateral play of the bits.

6. In an underreamer, in combination, a mandrel provided with a central bore, a chamber or socket and an open-sided slotted extension, said end block secured on said slotted extension, said end block provided with a central bar or bridge extending over the center of said slot and provided on its under side with spreading faces, a spring-actuated rod slidably arranged in said mandrel, and provided with a bit-operating key or head, and reaming bits or slips provided with cutting edges and with key seats or sockets somewhat larger than the ends of said key or head, said bits provided with portions adapted to operate against said faces, and with surfaces to bear against the well-casing to tilt said bits inward.

7. In an underreamer, the combination, with a hollow mandrel, provided with a socket or chamber and with downwardly-extending walls having an open-sided slot therebetween, an end block on the ends of said walls and forming a bridge therebetween, said bridge portion provided with a wedge-shaped under surface, a spring-actuated bit supporting and operating rod slidably arranged in said hollow mandrel, and tilting bits freely, detachably and tiltingly supported on said rod and operated thereby, said bits provided with surfaces adapted to contact with said wedge-shaped under surface of said bridge, and with portions to contact with the interior of the casing when the tool is drawn up into the casing.

8. In an underreamer, the combination, of a mandrel, provided with a central bore in its upper portion and an open-ended socket or chamber in its lower portion, the lower portion of the walls of said chamber having open-ended parallel side slots, an end block keyed to the lower ends of said mandrel and forming a bridge across the ends of said slots, said block provided with spreading faces, a spring-actuated rod slidably arranged in said central bore, means on said rod for supporting and operating the bits, and bits having outer surfaces bearing against the interior of said socket or chamber, portions adapted to contact with the interior of the casing as the tool passes through the casing, and portions adapted to slide upon said spreading surfaces.

9. In an underreamer, the combination, of a mandrel provided with a central bore in its

upper portion and an open-ended socket or chamber in its lower portion, the lower portion of the walls of said chamber having open-ended parallel side slots, the walls of the upper ends of said slots forming abutting surfaces, an end block keyed to the lower ends of said mandrel and forming a bridge across the open ends of said slots, said block provided with spreading faces, a spring-actuated rod slidably arranged in said central bore, means on said rod for supporting and operating the bits, and bits having outer surfaces bearing against the interior of said socket or chamber shoulders adapted to contact with said abutting surfaces when the bits are expanded, portions adapted to contact with the interior of the casing as the tool passes through the casing, and portions adapted to slide upon said spreading faces.

10. In an underreamer, the combination, of a mandrel, provided with a central bore, a central socket or chamber and an open-sided slotted hollow extension, having a bridge across its end, a spring-actuated slip-operating rod slidably mounted in said central bore and provided with a key or head and reaming-bits carried by said rod, portions of which bits extending up into said socket or chamber and bearing against the inner surface thereof, and said bits provided with portions adapted to operate against said bridge to expand the bits.

11. In an underreamer, the combination, of a mandrel, provided with a central bore, a central socket or chamber and an open-sided or slotted hollow extension, having a bridge across its ends, the upper end walls of the side slots forming abutting surfaces, a spring-actuated slip-operating rod slidably mounted in said central bore and provided with a key or head, and reaming-bits carried by said rod, portions of which bits extending up into said socket or chamber and bearing against the inner surfaces thereof, and said bits provided with portions adapted to operate against said bridge to expand the bits, and provided with shoulders to contact against said abutting surfaces.

12. In an underreamer, in combination, a hollow mandrel, provided with a slotted extension, a spring-actuated rod slidably arranged therein and provided with a head or key, an end block or bridge keyed to the projecting ends of said slotted extension, said end block provided with under spreading faces and side bearing portions, and reaming-bits carried on said head or key, said bits provided with portions adapted to contact with said spreading faces and said bearing portions and with portions adapted to contact with the interior of the casing as the tool passes there-through.

13. In an underreamer, the combination, of a mandrel provided with a central bore, a central socket or chamber and an open-sided hollow extension, an end or bridge block

796,197

keyed to the projecting ends of said slotted extension and provided with under spreading faces and side-bearing portions, a spring-actuated bit-operating rod slidably mounted in said central bore and provided with a key or head, and reaming-bits carried by said rod, portions of the bits extending up into said socket or chamber and bearing against the inner surface thereof, said bits provided with portions adapted to operate against said under spreading faces to expand the bits and said bits provided with portions adapted to contact with the interior of the casing as the tool passes therethrough.

14. In an underreamer, in combination, a hollow mandrel, provided with a slotted extension, a spring-actuated rod slidably arranged therein and provided with a head or key, an end block or bridge keyed to the projecting ends of said slotted extension, said end block provided with under spreading faces and side bearing portions, and reaming-bits carried on said head or key, said bits provided with portions adapted to contact with said spreading faces and said bearing portions, and means, contacting with the interior of the casing when the tool passes therethrough, holding the bits in contracted position.

15. In an underreamer, in combination, a

mandrel provided with a central bore, a slotted extension, and a central chamber, a spring-actuated rod slidably arranged in said central bore and provided with a key or head, an end block or bridge keyed to the projecting ends of said slotted extension, said end block provided with under spreading faces and side bearing portions, and reaming-bits carried by said head, said bits provided with portions adapted to contact with said spreading faces and bearing portions, with portions adapted to contact with the interior of the casing as the tool passes therethrough, with portions extending up into said socket or chamber and bearing against the inner surface thereof, and with shoulders adapted to bear against abutments on said mandrel when expanded, said abutments formed by the wall of the mandrel connecting the legs or walls of said slotted extension.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Los Angeles, in the county of Los Angeles and State of California, this 12th day of December, 1902.

EDWARD DOUBLE.

Witnesses:

FREDERICK S. LYON,
EDW. L. PAYNE.

[Endorsed]: Double 796,197. U. S. Dist. Court, Southern Dist. of Cal., Southern Division. Wilson v. Union Tool Co. In Equity, A-4. Defendant's Exhibit Double Patent No. 3. July 23, 1915. I. Benjamin, Notary Public. "Double patent No. 3." For Mr. Lyon. [821]

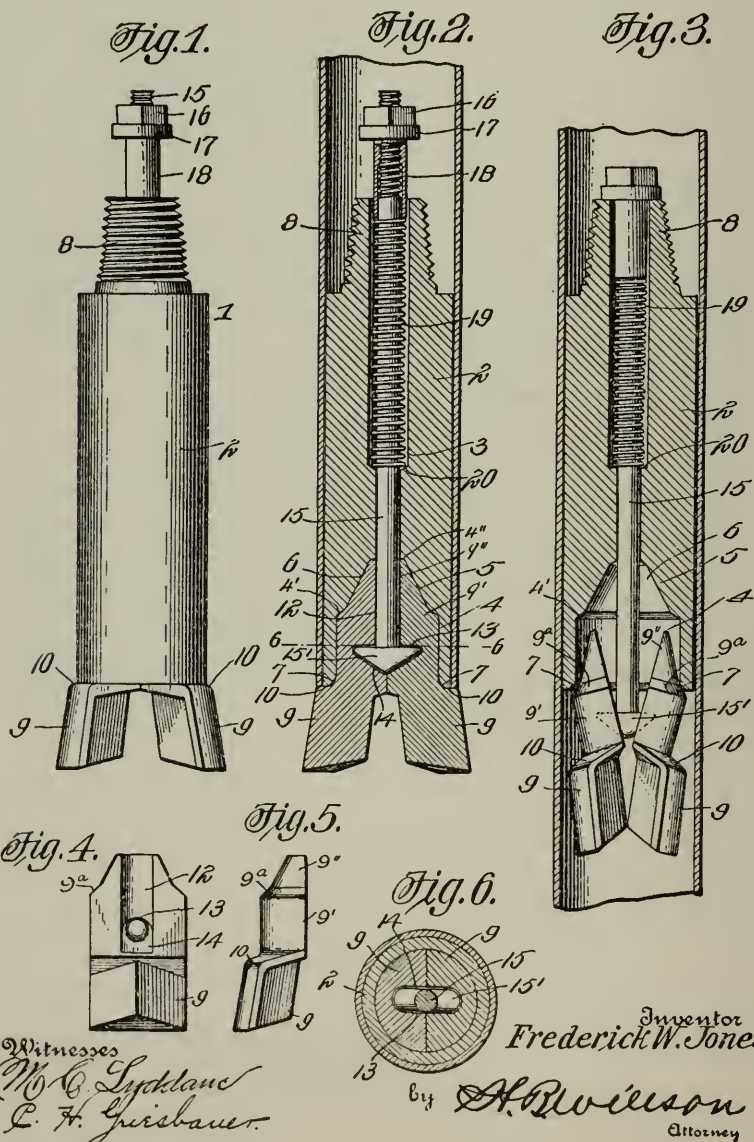
Complainant's Exhibit Jones Patent No. 809,570—
Letters Patent Issued to F. W. Jones for Under-
reamer.

No. 809,570.

PATENTED JAN. 9, 1906.

F. W. JONES.
UNDERREAMER.

APPLICATION FILED AUG. 30, 1904.



Witnesses
W. C. Lycklaue
C. F. Girsbauer.

Inventor
Frederick W. Jones
by H. B. Wilson
Attorney

drel. This construction also permits the use of bits so constructed and of such form as to abut against the walls of the chambers of the mandrel and take all the concussion or impact (when the underreamer is in use) off of the spring-actuated rod and the pivot key or head holding the bits, thereby eliminating all danger of breaking such parts.

By making the head 15' of the spring-actuated rod 15 in the form of an arrow-head and providing in the bits or slips 9 sockets or recesses 13, corresponding in form to the wings of the arrow-head, I provide for the tilting action of the slips or bits and for a strong supporting head or pivot 15' without necessitating removal of sufficient material from the bits to weaken the same, and in the manufacture of oil-well tools great strength is essential.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An underreamer of the class described comprising a centrally-bored mandrel having a cylindrical recess in its lower end, a recess above said cylindrical recess, a beveled shoulder between said upper recess and said cylindrical recess, a rod movable longitudinally in the bore of the mandrel and having a head on its lower end and a pair of cutters recessed on their opposing inner sides to receive the lower portion of said rod and the head of said rod, each of said cutters having a semicylindrical portion of a diameter to fit in the cylindrical recess of the mandrel, a semiconical upper portion to fit in the upper recess of the mandrel, a beveled shoulder to engage the upper beveled shoulder of the mandrel, a lower portion of a diameter exceeding that of the cylindrical recess of the mandrel, a beveled shoulder between the semicylindrical portion and the said portion of enlarged diameter, the said portions of enlarged diameter having their inner opposing sides oppositely beveled to form wedge-shaped openings between them.

2. An underreamer comprising a centrally-bored mandrel having a cylindrical recess in its lower end and a recess above said cylindrical recess, a beveled shoulder or abutment between said recesses, a spring-actuated rod slidable in said central bore, said rod having a head at its lower end, tilting slips tiltingly mounted on said head, said slips provided with cutting edges and with shoulders adapted to contact with said beveled shoulder or abutment.

3. An underreamer comprising in combination a centrally-bored mandrel having a cylindrical recess in its lower end and a second and smaller recess above said cylindrical recess, an inclined or beveled shoulder or abutment being provided between said recesses, a spring-actuated rod slidable in said mandrel, said rod provided with a pivot-head

and underreaming bits or slips tiltingly mounted on said head, said bits provided with underreaming-faces and with shanks adapted to extend up into said recesses, said shanks having reduced upper portions adapted to fit within the upper recess.

4. An underreamer comprising a hollow mandrel, a spring-actuated rod slidable therein, said mandrel having at its lower end a cylindrical chamber and an inner and smaller chamber above said cylindrical chamber, an inclined or beveled abutment formed between the adjoining ends of the walls of said chambers, reaming-bits mounted on said rod and provided with surfaces adapted to contact with said inclined shoulder or abutment to tilt said bits.

5. An underreamer comprising a mandrel having a recess or chamber in its bottom and an inclined or beveled abutment in the said chamber, a spring-actuated rod slidable in said mandrel, said spring-actuated rod having a head of a form similar to an arrow-heads tilting slips or bits having sockets corresponding to the wings of said arrow-head into which said arrow-head is adapted to fit, said slips or bits provided with shanks adapted to be drawn up into said chamber and provided with inclined shoulders adapted to abut against said beveled or inclined shoulders in said chamber to tilt said slips or bits on said arrow-head as said slips or bits are drawn inward into said chamber.

6. An underreamer comprising a hollow mandrel furnished in its lower end with a chamber provided at an intermediate portion with an inclined or beveled portion or abutment, a spring-actuated rod sliding through said chamber and extending up in said mandrel, two jaws pivoted to said rod respectively furnished at their upper ends with shanks extending above the pivot and into said chamber and furnished at their intermediate portions and above said pivot with inclined shoulders adapted to contact with said inclined abutment in said chamber.

7. An underreamer comprising a hollow mandrel furnished in its lower end with a chamber provided at an intermediate portion with an inclined or beveled portion or abutment, a spring-actuated rod sliding through said chamber and extending up in said mandrel, two jaws pivoted to said rod respectively furnished at their upper ends with shanks extending above the pivot and into said chamber, furnished above said pivot with inclined shoulders adapted to contact with said inclined abutment in said chamber, said shanks of said bits being of sufficient length to abut against the surface of the end wall of said chamber.

8. An underreamer comprising a mandrel provided in its lower end with an inwardly-extending chamber or socket, said chamber provided intermediate its length with an in-

clined or beveled abutment, a spring-actuated rod slidably mounted in said mandrel and extending through said socket or chamber up into the mandrel, two slips or bits pivoted to said rod and respectively furnished at their upper ends with shanks extending above the pivotal point to enter the upper end of said socket or chamber, said bits provided above said pivotal point with inclined shoulders adapted to abut against said inclined abutment in said socket or chamber to tilt said bits, said bits also provided with shoulders adapted to abut against the end of said mandrel.

15. 9. An underreamer comprising a centrally-bored mandrel having a cylindrical recess in its lower side and a recess above said cylindrical recess, a shoulder or abutment between said recesses, a spring-actuated rod slidably mounted in said central bore, said rod having a head at its lower end, tilting slips tiltingly mounted on said head, said slips provided with cutting edges and with inclined or beveled shoulders adapted to contact with said shoulder or abutment.

10. An underreamer comprising in combination a mandrel having a cylindrical chamber in its lower end and a tapering chamber above said cylindrical chamber and forming an inward extension thereof, a spring-actuated rod slidably mounted in said mandrel and extending up from said cylindrical chamber into said mandrel, reaming bits or slips tiltingly mounted on the lower end of said rod, said bits or slips having shanks extending above said lower end of said rod, said shanks having tapered upper ends corresponding to said tapered chamber, said bits or slips adapted to contact with the walls of said chambers and provided with shoulders adapted to contact with the end of said mandrel when said bits are in operative position.

11. An underreamer comprising a mandrel, a spring-actuated rod slidably therein, said mandrel having at its lower end a cylindrical chamber and an inner and smaller chamber above said cylindrical chamber, an abutment formed between the adjoining ends of the walls of said chambers, reaming bits mounted on said rod and provided with surfaces adapted to contact with said abutment to tilt said bits.

12. An underreamer comprising in combination a mandrel having a cylindrical chamber in its lower end and a tapering chamber above said cylindrical chamber and forming an inward extension thereof, a spring-actuated rod slidably mounted in said mandrel and extending up from said cylindrical chamber into said mandrel, the end of said rod in said cylindrical chamber being formed in the shape of an arrow-head, reaming bits or slips having sockets to receive the wings of said arrow-head and tiltingly mounted thereon,

said bits or slips having shanks extending above said lower end of said rod and into said tapering chamber, the upper ends of said shanks being tapered to correspond to said tapered chamber, said bits or slips adapted to contact with the walls of said chambers and abut against the end wall of said tapered chamber and provided with shoulders adapted to abut against the end of the mandrel when in operative position.

13. An underreamer comprising a centrally-bored mandrel having a cylindrical chamber in its lower end and a recess above said cylindrical recess, a beveled or inclined shoulder or abutment formed between said recesses, a spring-actuated rod slidably mounted in said central bore, said rod having an arrow-head-shaped end in said cylindrical chamber, bits or slips having sockets corresponding to and adapted to receive the wings of said arrow-head and having shanks extending up into said cylindrical chamber and recess thereabove and provided with shoulders to abut against said abutment, said bits or slips abutting against the end wall of said recess when in operative position.

14. An underreamer comprising in combination, a mandrel, a spring-actuated rod slidably therein, said mandrel having in its lower end a cylindrical chamber and an inner and smaller chamber above said cylindrical chamber, an inclined or beveled abutment formed between the adjoining walls of said chambers, said rod provided with an arrow-head-shaped end, reaming-bits provided with sockets corresponding to and adapted to receive the wings of said arrow-head and thereby tiltingly supported on said rod, said bits provided with surfaces adapted to contact with said inclined shoulder or abutment to cause the bits to tilt.

15. An underreamer comprising a mandrel provided in its lower end with an inwardly-extending socket or chamber, said chamber provided intermediate its length with an inclined shoulder or abutment, a spring-actuated rod slidably mounted in said mandrel and extending through said socket or chamber up into the mandrel, two slips or bits pivoted to said rod and respectively furnished at their upper ends with shanks extending above the pivotal point to enter the upper end of said socket or chamber, said bits or slips provided with inclined shoulders above said pivot-point to abut against said inclined abutment in said socket or chamber to tilt said bits.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FREDERICK W. JONES.

Witnesses:

D. W. HUFFMAN,
ARTHUR H. BLANCHARD.

[Endorsed]: 809,570. U. S. Dist. Court, Southern Dist. of California, Southern Division. Wilson v. Union Tool Co., A-4, B-62, Consolidated. Jones, Complainant's Exhibit on Cross-examination of Fred W. Jones. Copy of Jones U. S. Patent No. 809,570. Aug. 14, 1915. I. Benjamin, Special Examiner. Wilson vs. Union Tool Co., A-4, B-62 Consolidated. Complainant's Exhibit Copy of Jones U. S. Patent No. 809,570. Leo. Longley, Notary Public. Aug. 30, 1915. [822]

Defendant's Exhibit Swan Patent—Letters Patent
Issued to J. C. Swan for Underreamer.

No. 683,352.

Patented Sept. 24, 1901.

J. C. SWAN.

UNDERREAMER.

(Application filed Dec. 10, 1900.)

(No Model.)

2 Sheets—Sheet 1

Fig. 2.

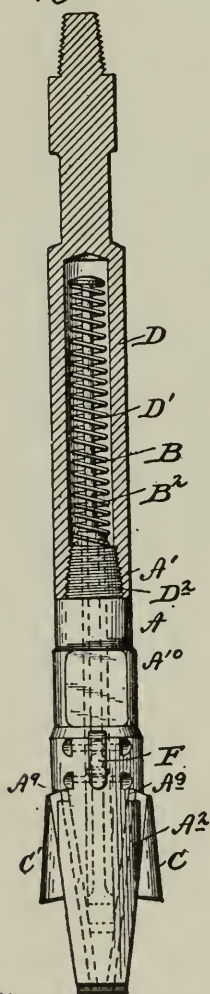
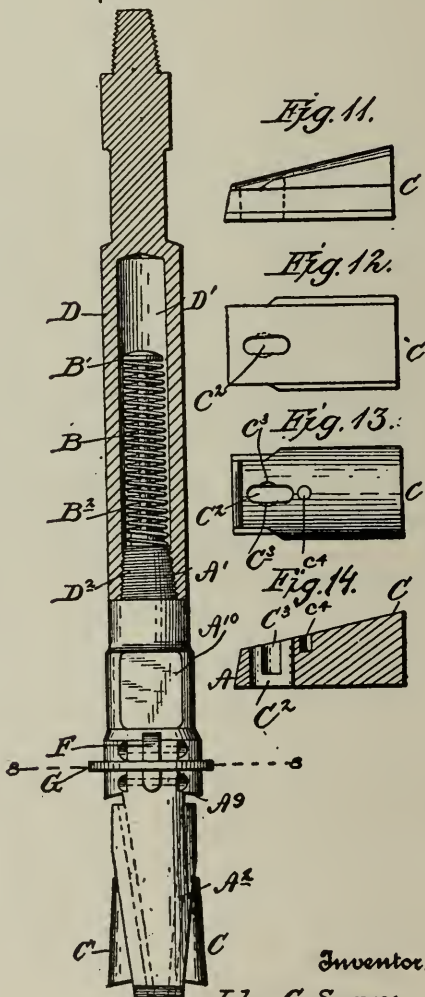


Fig. 1.



Witnesses
Frank L. Curran
Wm. O. Brecken

Inventor:
John C. Swan.
by Sturtevant & Buckley
Attorneys

No. 683,352.

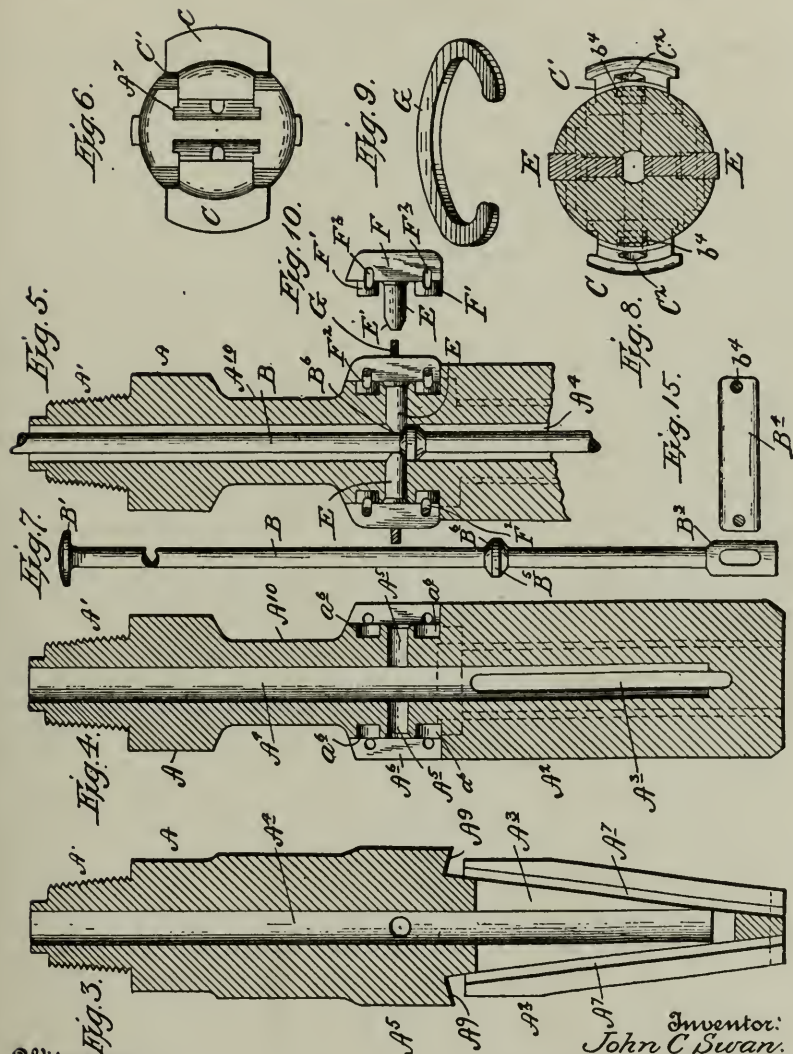
Patented Sept. 24, 1901.

J. C. SWAN.
UNDERREAMER.

(Application filed Dec. 10, 1900.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses
Frank L. Curand.
Ernest O. Breckin.

Inventor:
John C. Swan.
by Shulman & Wreley
Attorneys.

UNITED STATES PATENT OFFICE.

JOHN C. SWAN, OF MARIETTA, OHIO, ASSIGNOR TO SWAN MACHINE & TOOL COMPANY, OF SAME PLACE.

UNDERREAMER.

SPECIFICATION forming part of Letters Patent No. 683,352, dated September 24, 1901.

Application filed December 10, 1900. Serial No. 39,404. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. SWAN, a citizen of the United States, residing at Marietta, in the county of Washington, State of Ohio, have

invented certain new and useful Improvements in Underreamers, of which the following is a description, reference being had to the accompanying drawings and to the letters of reference marked thereon.

My invention relates to devices for reaming out or enlarging well-holes, and particularly to devices of such character intended for underreaming—that is, reaming out or enlarging the well-hole drilled below a casing in order to permit the casing to be lowered farther down; and my invention consists in the construction and combination of devices for this purpose hereinafter described.

In the drawings, Figure 1 is a perspective view, partly in section, showing the reaming-heads held in contracted position by means of the removable ring. Fig. 2 is a corresponding view showing the reaming-heads in expanded position ready for operation. Fig. 3 is a longitudinal sectional view of the reamer-body. Fig. 4 is a longitudinal sectional view of the reamer-body, taken on a plane at right angles to that on which Fig. 3 is taken. Fig. 5 is a longitudinal sectional view of the same plane as Fig. 4, showing the actuating-rod and trips in position. Fig. 6 is a cross-sectional view showing the reaming-heads in expanded position. Fig. 7 is a detail of the actuating rod and spring. Fig. 8 is a cross-section on line 8 8 of Fig. 1. Fig. 9 is a detail of the removable ring. Fig. 10 is a detail view of one of the trips. Figs. 11, 12, 13, and 14 are detail views of the reaming-heads, and Fig. 15 is a detail of the pin which carries the reaming-heads.

In the drawings, A is the reamer-body, having at its upper end the screw coupling or pin A' and having its lower end A² wedge-shaped or tapered, as shown. Through the wedge-shaped or tapered portion is formed a slot A³, extending from a point near the lower end of this portion nearly to its upper end. A central bore A⁴ extends from the upper end of the reamer-body nearly to the lower end of the slot. In the sides or housing of the wedge-shaped or tapered portion A² ways

A⁷ are cut. These ways are made substantially dovetailed or wider at their inner ends, as shown at A⁸, in order to receive and retain corresponding extensions on the sides of the reaming-heads C. At the upper ends of the ways A⁷ are arranged abutments A⁹, preferably formed by cutting away the material of the reamer-body at an angle of about nineteen degrees to the horizontal. A short distance above these abutments radial holes A⁵ at right angles to the central bore A⁴ are formed. At the outer ends of these holes A⁵ are formed longitudinal recesses A⁶. Above these recesses is formed the usual too-square A¹⁰.

In the central bore A⁴ of the reamer-body is arranged the spring-rod B. The rod extends above the upper end of the reamer-body and has a head B' at its upper end. Around the rod, between the head B' and the upper end of the reamer-body, is arranged a coiled spring B². The lower end of the rod B is also provided with a head B³. This head is slotted, as shown, and through it passes a flat pin B⁴. This pin extends radially outward in both directions through the slot A³ and carries at each end a reaming-head C, the reaming-heads being arranged to have free movement on the pin and the pin being arranged to be freely movable in the slot in the head B³. The reaming-heads C are provided with slots C², in which the ends of the pin B⁴ are received. These slots are countersunk at their outer ends, as shown at C³, to receive the heads of rivets b⁴, which are passed through the outer ends of the pin B⁴ and serve to prevent the removal of the reaming-heads from the pin. The outer faces of the reaming-heads are curved, preferably, on the arc of a circle of the diameter to which the well-hole is to be enlarged. The heads are wider at their lower ends than at their upper ends. Their rear portions are made narrower than their faces in order to fit within the ways A⁷ of the reamer-body and are substantially dovetailed in cross-section to fit and be retained by the ways. The upper ends of the reaming-heads are cut at an angle corresponding with the faces of the abutments A⁹, against which they rest when in expanded position, as hereinafter described. The reaming-heads are provided in their outer faces with

recesses c^4 for the insertion of hooks, by which they may be drawn downward into the position shown in Fig. 1.

Secured to the upper end of the reamer-body by its box D^2 , which screws onto the screw coupling or pin A' , is a spring-case D , having a central longitudinal bore D' of a diameter sufficient to receive the rod B with its spring B^2 . This bore D' extends upward a distance sufficient to permit the rod B to pass freely into it. The bore D' being closed at its upper end forms an air-tight chamber, which in operation will be so far filled with air under pressure as to exclude the water and sediment in which the tool ordinarily works from contact with the spring under ordinary pressures and to expel any water or sediment which may have entered the chamber under extraordinary pressures as the reamer is drawn upward. The spring B^2 , acting against the head B' , forces the rod B , and with it the pin B^4 , upward until the pin reaches the upper end of the slot A^3 . The pin will carry with it in its movement the reaming-heads C , and as these heads move upward they will be caused to move outward by their engagement with the central wedge and with the ways A^7 , cut in the housing or sides of the wedge-shaped or tapered lower portion A^2 of the reamer-body. At the limit of their upward movement the reaming-heads will rest with their upper angular ends in contact with the angular faces of the abutments A^9 . In this position the heads are ready for use. By drawing the reaming-heads downward they are caused to travel inward by reason of their engagement with the ways A^7 of the wedge-shaped or tapered portion A^2 of the reamer-body. The pin B^4 , and with it the spring-rod B , will be drawn downward with the heads until the pin reaches the lower end of the slot A^3 . In order to hold the reaming-heads in this position, I provide the rod B with an obstruction, preferably in the form of a shoulder B^5 , having a beveled upper face B^6 . When the reaming-heads are drawn down as far as possible, this shoulder B^5 is in position to have its beveled face engaged by the tapered ends E' of pins E , which are inserted in the holes A^5 , above described. These pins are preferably integral with trips F , which are preferably narrow strips of metal fitting the longitudinal recesses A^6 , above described. The angle of the beveled face B^6 of the shoulder B^5 and the taper E' of the pins E is such that if the pins are not positively held against the rod the spring B^2 will cause the bevel B^6 to force the pins outward sufficiently to permit the shoulder to pass the ends of the pins. The trips F are preferably provided on their inner faces with projections F' , which enter recesses a^6 in the reamer-body and are provided with slots F^2 , through which pass pins a^7 . By means of these pins and slots the movement of the trips is guided and at the same time limited. The projections F' and recesses a^6 also aid in guiding

the movement of the trips. It should be understood, however, that the form of the trips may be varied, it being essential only that the trips be capable when held at the limit of their inward movement of holding the pins E with their inner ends against the beveled faces of the shoulder B^5 , and thus preventing the upward movement of the spring-rod.

In order to insert the tool in the casing of the well, the reaming-heads will be drawn downward, as above described, to the limit of their movement in that direction. This will compress the spring B^2 and bring the shoulder B^5 in position to have its upper face B^6 engaged by the inner ends of the pins E . The pins E are then forced inward by pressure on the trips F , and the trips and pins are temporarily held in position by a removable ring G , made open at one side, as shown in Fig. 9, so that it can be readily slipped into place and removed at the tool-square formed on the reamer-body. The tool is then lowered into the casing. The reaming-heads will enter the casing freely and will pass through it without contact with its interior. The trips F will enter the casing and will be held from outward movement by contact with its interior. The ring G will not enter the casing; but as the tool enters the ring will be pushed upward until it reaches the tool-square, when it may be readily removed. The trips F are preferably rounded at their lower ends, so as to enter the casing readily and to pass any slight obstruction which may be met with as the tool is lowered through the casing. Their upper ends are preferably inclined and rounded, as shown, so as to enter the lower end of the casing when the tool is drawn upward through the casing. As the tool is lowered the reaming-heads, through the action of the interior walls of the casing holding the trips and pins from outward movement, and thus holding the spring-rod from upward movement, will be held out of contact with the interior of the casing, thus avoiding wear on the reaming-heads and possible injury to the casing. It will be understood that it is essential to the successful introduction of the reamer into the casing that the heads be held in this contracted position out of contact with the interior. As soon as the trips pass below the lower end of the casing, which, as will be understood, is elevated a short distance from the shoulder of the small hole to be reamed for the purpose of affording the space necessary for an effective stroke of the reamer, they will be forced outward by the action of the bevel B^6 on the ends of the pins E , the shoulder B^5 will pass the ends of the pins, and the reaming-heads through the action of the spring B^2 will be forced upward on the wedge-shaped or tapered portion A^2 until their upper ends rest against the abutments A^9 . They are then in position for operation. In operation this tool is made a part of the usual string of oil and Artesian well drilling tools. As the tool is raised and

allowed to fall, as in the usual operation of drilling, the lower outer edges of the reaming-heads will strike upon the shoulder left below the lower end of the casing and cut it away, thus enlarging or reaming out the hole already drilled to the size desired. The lower end of the portion A² of the reamer-body below the lower edges of the reaming-heads will enter the hole already drilled, and thus serve as a guide for the tool. If, as is often the case, the reaming-heads stick at the point of impact, the lift of the tool will free them by causing them to be drawn inward.

While it should be understood that sufficient metal is left in the tapered or wedge-shaped portion A² to give the necessary strength, the main effect of the impact of the reaming-heads on the material acted on by them is sustained by the abutments A⁹. The force of the impact tends to drive the lower ends of the reaming-heads inward and by a lever action to force the upper ends of these heads outward. This tendency to force the upper ends outward is overcome by forming the abutments A⁹ angular, as shown. The strain is thus taken off the upper portion of the ways A⁷.

In withdrawing the reamer as the tool is drawn upward the lower end of the casing coming in contact with the trips will force them inward, and as the tool is raised farther the end of the casing will cause the reaming-heads to move downward on the inclined portion A² until they are carried inward sufficiently to permit of their entrance within the casing. As the tool is raised through the casing the outer edges of the heads will necessarily be in contact with the interior of the casing.

The ways A⁷ are open at their lower ends, this construction permitting the reaming-heads to be readily removed and replaced, the pin B⁴ preventing the heads from dropping out in operation. The portion of the wedge or taper in which the ways A⁷ are formed is made of sufficient thickness to not only serve as a guide for the tool, as above described, but to also sustain the wear caused by the sidewise movement of the end of the tool in operation and the side blows of the reaming-heads, due to irregularities of the shoulder in hard rock.

It should be understood that the shoulder B⁵ may be of any preferred form, it being essential only that it be of sufficient size to have the beveled upper face B⁶ formed on it.

I prefer to make the reaming-heads in one piece of steel; but it should be understood that they may be made in one or more pieces and may be made part of steel and part of iron, as found most desirable. It should also be understood that I do not desire to be limited to the precise form or precise construction of the several parts of my device as shown and described, it being obvious that many changes may be made without depart-

ing from the essential features of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an underreamer, the combination of a reamer-body having a tapered or wedge-shaped portion, a reaming-head arranged to be movable on said tapered or wedge-shaped portion, means for automatically moving the reaming-head to the base or thick end of the tapered or wedge-shaped portion, and means arranged to contact with the interior of the casing for holding the reaming-head at the narrow end of the tapered or wedge-shaped portion during the passage of the tool through the casing; substantially as described.

2. In an underreamer, the combination of a reamer-body having an oblique face formed thereon, an abutment at the upper end of the oblique face, retaining-ways along the oblique face, a reaming-head arranged to slide on the oblique face and to stop against the abutment, a spring above said abutment, connections between the spring and reaming-head for holding the reaming-head against the abutment and means arranged to contact with the interior of the casing for holding the reaming-head away from the abutment during the operation of lowering the tool through the casing; substantially as described.

3. In an underreamer, the combination of a reamer-body having a tapered or wedge-shaped portion, retaining-ways along the faces of the tapered or wedge-shaped portion, abutments at the upper ends of said faces, reaming-heads arranged to be movable on the tapered or wedge-shaped portion, a spring arranged to automatically move the reaming-heads into contact with said abutments and means arranged to contact with the walls of the well-casing for locking the spring against operation during the passage of the tool through the casing; substantially as described.

4. In an underreamer, the combination of a reamer-body, having a tapered or wedge-shaped lower portion, the lower end of which is adapted to enter the hole to be reamed or enlarged, abutments at the upper end of the tapered or wedge-shaped portion, reaming-heads movable on the tapered or wedge-shaped portion and arranged to stop against said abutments, yielding means for moving the reaming-heads to the wider end of the tapered or wedge-shaped portion into contact with said abutments, means arranged to contact with the interior of the casing for temporarily locking said yielding means against operation to hold the reaming-heads at the narrow end of the tapered or wedge-shaped portion, and means for retaining said locking means in operative position before the tool is inserted in the well-casing; substantially as described.

5. In an underreamer, the combination of a reamer-body, having a tapered or wedge-

shaped lower portion, reaming-heads movable in ways on said tapered or wedge-shaped portion, a rod within the reamer-body having near its lower end a pin extending through a slot in the reamer-body, and carrying the reaming-heads, a spring arranged to force the rod and with it the reaming-heads, upward into expanded position, pins carried by the reamer-body having their inner ends adapted to engage a shoulder carried by the rod to hold the rod from upward movement, and means for holding the pins in engagement with the shoulder on the rod during the passage of the tool through the well-casing; substantially as described.

6. In an underreamer, the combination of a reamer-body, having a tapered or wedge-shaped lower portion, reaming-heads movable in ways on said tapered or wedge-shaped portion, a rod within the reamer-body having near its lower end a pin extending through a slot in the reamer-body, and carrying the reaming-heads, a spring arranged to force the rod and with it the reaming-heads, upward into expanded position, pins carried by the reamer-body having their inner ends adapted to engage a shoulder carried by the rod to hold the rod from upward movement, and means adapted to contact with the interior of the casing for holding the pins in engagement with the shoulder on the rod during the passage of the tool through the well-casing; substantially as described.

7. In an underreamer, the combination of a reamer-body having a tapered or wedge-shaped portion provided with ways, reaming-heads carried in said ways, a pin connecting the reaming-heads and movable therein, a longitudinal rod having a shoulder thereon

within the reamer-body, through which the pin passes and is freely movable, means for moving the rod and means engaging the shoulder on the rod and arranged to contact with the interior of the casing for preventing the movement of the rod during the passage of the tool through the well-casing; substantially as described.

8. In an underreamer, the combination of a reamer-body having a tapered or wedge-shaped portion provided with ways, reaming-heads carried in said ways having their upper ends terminating at an oblique angle, and abutments formed on the reamer-body above the ways, having faces arranged at an oblique angle adapted to receive the upper ends of the reaming-heads and yielding means arranged above said reaming-heads for holding them against said abutments; substantially as described.

9. In an underreamer, the combination of a reamer-body having ways formed in its lower portion, reaming-heads carried in said ways, having their upper ends terminating at an oblique angle, and abutments formed on the reamer-body above the ways having their faces arranged at an oblique angle adapted to receive the upper ends of the reaming-heads whereby the force of the blow upon the abutments is directed inward toward the center of the reamer-body and yielding means for holding the reaming-heads against said abutments; substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN C. SWAN.

Witnesses:

GRAFTON L. MCGILL,
A. P. GREELEY.

[Endorsed]: Wilson vs. Union Tool. Swan. U. S. Dist. Court, Southern Dist. of Cal. Southern Division. Wilson v. Union Tool Co. In Equity, A-4. July 23, 1915. Defendant's Exhibit Swan Patent. I. Benjamin, Notary Public. [823]

No. 762,435.

PATENTED JUNE 14, 1904.

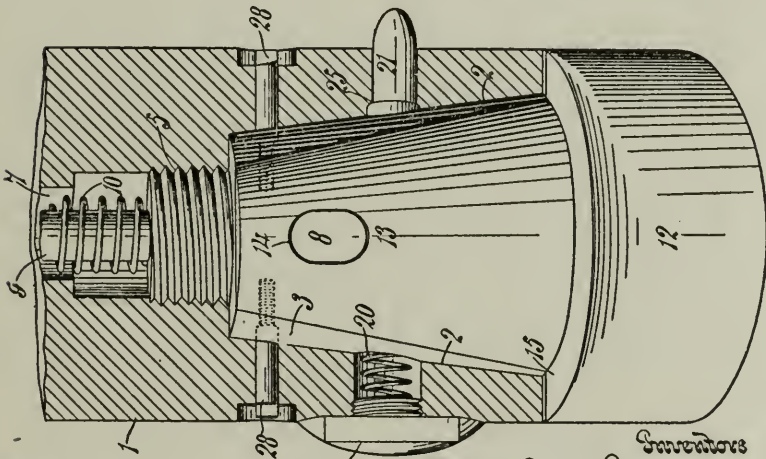
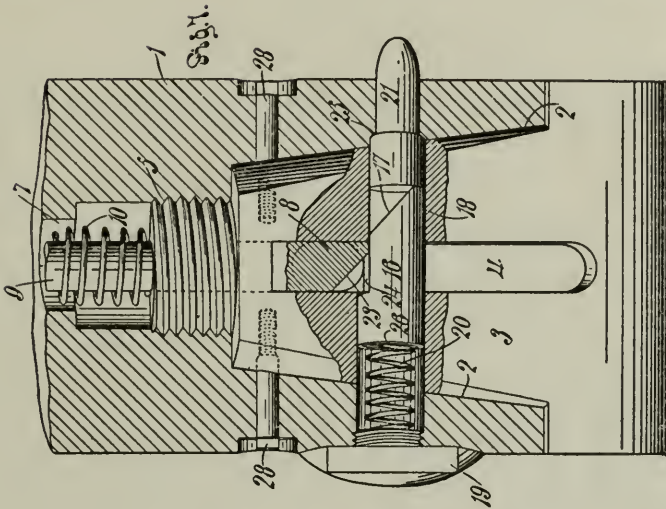
T. A. O'DONNELL & A. G. WILLARD.

UNDERREAMER AND DRILL.

APPLICATION FILED DEC 8 1899

NO MODEL.

2 SHEETS—SHEET 2



Witnesses
 E. J. Ingram.
 J. Townsend.

Fig. 2.

Inventors
 Thos. A. O'Donnell
 Arthur G. Willard
 J. Townsend Prop.
 per atty.

UNITED STATES PATENT OFFICE.

THOMAS A. O'DONNELL AND ARTHUR G. WILLARD, OF LOS ANGELES, CALIFORNIA.

UNDERREAMER AND DRILL.

SPECIFICATION forming part of Letters Patent No. 762,435, dated June 14, 1904.

Application filed December 8, 1899. Serial No. 739,712. (No model.)

To all whom it may concern:

Be it known that we, THOMAS ARTHUR O'DONNELL and ARTHUR GAY WILLARD, citizens of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Underreamer and Drill, of which the following is a specification.

The object of our invention is to provide an underreamer and drill which can be readily lowered through a casing smaller than the hole to be drilled and which in operation will expand below the casing and will ream out and drill a hole below the casing larger than the casing and which can invariably and without difficulty be drawn up through the casing whenever it is so desired. This underreamer is adapted for use in all kinds of formation and in deep wells, such as oil-wells and Artesian wells. A difficulty to be avoided in the use of underreamers is the liability of damaging the shoe or lower end of the casing when it is attempted to ream close to the casing.

One object of our invention is to avoid any danger of such injury to the casing when reaming close to the casing, but at the same time providing for the positive locking of the jaws while they are below the casing. It is very important in the operation of underreamers that the jaws shall be positively locked when they are working underneath the casing, so that there shall be no looseness of parts and no liability of the jaws being crowded together or failing to cut.

Another object of our invention is to so construct the underreamer that there will be no openings through which dirt can get into the inside of the underreamer to cause clogging or unnecessary wear.

Another object of our invention is to provide for the absolute automatic operation of the locking and unlocking device, so that whenever the reamer passes below the casing it will immediately expand and positively lock, and whenever it is drawn upward sufficiently to cause the jaws to engage the casing the jaws will collapse and pass into the casing without any obstruction.

The accompanying drawings illustrate our invention.

Figure 1 is a fragmental view showing a side elevation of the lower end of our underreamer as it appears in passing down inside the well-casing. In this view the side of the stock which is at the left in Fig. 4 is shown. Fig. 2 is a like view showing the underreamer in operation below the casing. In this view the side of the stock which is at the right in Fig. 4 is shown. Fig. 3 is a vertical mid-section on line 3 3, Figs. 2, 4, and 5. Fig. 4 is a vertical mid-section on line 4 4, Figs. 3 and 5. Fig. 5 is a sectional plan on a plane cutting through the locking-bolt. The plane of this section is indicated by the line 5 5, cutting through the dotted position shown in Figs. 3 and 4. Fig. 6 is a fragmental perspective detail view showing the interior parts, which are detachable from the stock. A fragment of the stock is shown in vertical mid-section. Fig. 7 is a like fragmental perspective view illustrating the interior parts in further detail.

1 indicates the stock, provided with an upwardly-tapering frusto-conical socket 2 in its lower end, which socket is practically formed into two tapering sockets by a vertically-slotted wedge-shape partition 3, extending across the socket 2 of the stock and fitted at its opposite edges to the socket and provided with a transverse slot 4. The upper end of the partition 3 is screw-threaded, as at 5, and screwed into the stock.

6 indicates a way through the upper end of the partition, leading from the slot 4 into a spring-chamber 7, provided in the stock above the partition.

8 indicates a cross-head in the slot and provided with a stem 9, extending through the way 6 into the spring-chamber.

10 indicates the spring in the spring-chamber for normally holding the stem up.

11 indicates nuts on the upper end of the stem to rest upon the spring.

12 indicates a jaw member provided with a tapering shank 13 to fit in one of the tapering shank-sockets formed between the partition 3 and the wall of the tapering socket 2 in the end of the stock. The shank 13 is provided with a cross-head socket 14 in the extended plane of the slot 4 of the partition. The jaw member is provided with a shoulder 15 to fit

against the lower end of the stock when the shank is fully seated in the tapering socket. 12' indicates a like jaw member provided with the shank 13', cross-head socket 14', and shoulder 15', and said jaw member 12', is arranged with its shank in the other socket formed therefor between the partition 3 and the wall of the tapering socket 2. The cross-head 8 is arranged to play in the slot 4, and its opposite ends are inserted in the cross-head sockets 14 14', so that the two jaw members are carried by the spring 10 through the medium of the stem and cross-head.

16 indicates a spring-pressed bolt normally extending across the slot 4 in the path of the cross-head 8 to lock the cross-head against lowering. In Fig. 3 the normal locking position of this bolt is indicated in dotted lines at the lower end of the view. The outer end of the bolt is provided at its upper side with a beveled face 17, which is normally chambered in a portion of the bolt-hole 18, which extends through the partition and through the stock, being closed at one end by a screw-plug 19.

20 indicates a spring in the bolt-hole to normally hold the bolt 16 normally inserted across the slot 4 with its beveled portion 17 fully beyond the slot.

21 indicates a bolt-retracting pin mounted in the bolt-hole and normally projecting from the side of the stock to be engaged and thrown by the well-casing 22 to bring the bolt 16 into position shown in solid lines in Fig. 4, with the beveled face 17 of the bolt in the path of the cross-head 8. The cross-head 8 has a beveled face 23 to engage the beveled face 17 of the bolt when the bolt is in its retracted position. (Shown in solid lines in Fig. 4.)

The spring 10 is of sufficient strength to normally hold the jaws 12 12' in their up-drawn position, with their shanks fully seated in the sockets therefor. The bolt-hole 18 is larger at the end which is closed with the plug 19 than at the opposite end, and shoulders 24 and 25 are provided to respectively prevent the bolt and the bolt-retracting pin from being thrown too far by the force of the bolt-spring 20. Preferably the bolt 16 is provided with a chamber 26 to seat one end of the spring 20, and the spring-holding plug 19 is provided with a like chamber 27 to seat the other end of the spring 20.

For convenience in assembling the parts the cross-head stem 9 is made of two parts, one of which, *a*, is integral with the cross-head and the other, *b*, is screwed to the part *a*. The part *a* of the stem together with the cross-head are of less length than the slot 4, and said stem is of greater length than the way 6, so that the part *a* and cross-head 8 can be inserted into the slot and the section *a* then pushed up through the way 6. Then the section *b* of the stem 8 is screwed onto the section *a*, after which the spring is placed in

position and the nuts 11 screwed down into place to give the appropriate tension to the spring which rests upon the upper end of the partition 3. Then the jaws 12 12' are placed against the sides of the partition with their sockets 14 14' caught over the ends of the cross-head 8, and the parts thus assembled are inserted into the conical socket 2 and turned to screw the screw-threaded upper end of the partition into the screw-threaded part therefor in the stock. 28 indicates a screw inserted through the stock and screwed into the partition to prevent the partition from unscrewing. After the parts have thus been assembled the bolt-retracting pin 21 is inserted into the bolt-hole and guideway 18. Then the bolt 16 is inserted into the bolt-hole 18 and the spring 20 is brought into place and the plug 19 screwed home. The tool is then in condition for operation.

In practical operation in order to start the tool down into the well through the casing 22 the workman will first push the bolt-retracting pin 21 in into the position indicated in solid lines in Fig. 4 and then will draw the jaws 12 12' down into the position indicated in Fig. 1. Then the tool will be let down into and allowed to pass through the casing. It is to be observed in Figs. 1 and 4 that the jaws are rounded, as at 29, so that the cutting edge of the jaws are returned when the jaws are in their down-drawn position, so that the cutting edges will not touch the casing during the descent of the tool. When the tool has passed beyond the shoe 22' of the casing, the spring 10 draws the cross-head up, thus drawing the bits up into their socket in the stock. The jaws engaging the walls of the well will be held thereby sufficiently so that the downward stroke of the stock assists the action of the spring to seat the jaw-shanks firmly in their sockets, thus bringing the shoulders 15 15' to fit firmly against the end of the stock. The spring 20 throws the bolt 16 and the pin 21 so that the beveled face 17 of the bolt is chambered in the partition, and the cross-head is thus effectually locked against drawing out of the stock on the upstroke of the stock. Whenever the tool is drawn upward so far that the pin 21 is again forced in by the shoe 22' of the casing, the bolt is thrown into its unlocking position, so that when the shoulders 15 15' of the jaws engage with the shoe 22' the cross-head is free to slip in the stock, thus to allow the stock to be drawn up while the jaws collapse into the position indicated in solid lines in Fig. 1 and in dotted lines in the upper position in Fig. 3. The tool can therefore be readily drawn out through the casing and can be lowered and raised at pleasure, and whenever it is below the casing it is ready for effective operation, as before described.

The partition 3 is flat-faced and holds the jaws spread apart when the shanks are fully 130

seated in the shank-sockets. The ends of the cross-head have sufficient play in their sockets to allow the jaws to swing freely toward each other as the shanks withdraw from the 5 shank-sockets.

The bolt and its retracting-pin are to be located as close as possible to the shoulders and the cutting edges of the jaws, so that the jaws may become locked as soon as possible 10 after passing below the lower end of the casing and will work in locked position very close to the bottom of the casing, and yet will always be fully unlocked before the shoulders can injure the bottom of the casing on an 15 upstroke.

What we claim, and desire to secure by Letters Patent of the United States, is—

1. An underreamer comprising a stock provided with two tapering sockets in its lower 20 end, a vertically-slotted wedge-shaped partition between the sockets, and having bolt-holes opening from the slot axially in line with each other below the top of such sockets, such stock being also provided with a spring-chamber above the partition; a jaw member 25 provided with a tapering shank to fit in one of said sockets, and also provided with a shoulder to fit against the lower end of the stock when the tapering shank is seated in its socket, said 30 shank being provided with a cross-head socket in the extended plane of said slot; a like jaw member having its shank seated in the other socket of the stock; a cross-head to play in the slot and having its opposite ends seated 35 in the sockets of the shanks, respectively, and having a stem extending up into the spring-chamber; a spring in said chamber for normally holding up the stem, cross-head and jaws; a spring-pressed bolt normally extending 40 across the slot in the path of the cross-head to lock the cross-head against lowering, said bolt having at the upper side of its end, a beveled portion normally chambered in the partition; a spring for normally holding the 45 bolt in its locking position; and a bolt-retracting pin mounted in the bolt-hole and normally projecting from the side of the stock to be thrown by the well-casing to bring the bolt into position with the beveled portion of the 50 bolt in the path of the cross-head.

2. The combination of a stock provided with a tapering socket in its lower end and with a spring-chamber above said socket and with a screw-threaded portion between said 55 spring-chamber and said socket; a wedge-shape partition fitted in the socket of the stock and provided with a transverse slot and screwed into the stock and provided with a way leading from the slot through the upper 60 end of the partition; a cross-head in the slot and provided with a stem extending through the way into the spring-chamber; a spring in the spring-chamber for normally holding the stem up; two jaw members carried by the 65 cross-head on the opposite sides of the parti-

tion and each provided with a tapering shank to fit the stock-socket on opposite sides of the partition and also provided with a shoulder to engage the lower end of the stock when the shanks are seated in their sockets in the stock; 70 a spring-pressed bolt to play across the slot in the partition and provided with a beveled portion at the upper side and outer end; and a bolt-retracting pin mounted in the stock and normally projecting from the side of the stock 75 to be thrown by the well-casing to bring the bolt into position with the beveled portion of the bolt in the path of the cross-head.

3. In an underreamer, the combination with a jaw-carrying head having a transverse 80 guideway, of a locking-bolt for said head arranged in said guideway; a pin sliding in said guideway to retract the bolt to unlock the head; a stop for said pin being provided in the guideway; and a spring to normally press 85 the bolt toward the stop and into locking position, and to project the pin from the head to be returned by contact with the casing.

4. An underreamer-stock provided with a socket in its lower end; a slotted, downwardly- 90 tapering partition rigidly fixed in the socket to form two shank-seating sockets to seat the shanks of two jaws on opposite sides of said partition; a jaw on each side of said partition and a jaw-carrying head moving in the slot of 95 said partition.

5. An underreamer comprising a stock, the lower end of which has two upwardly-tapering shank-seating sockets with a flat-faced 100 downwardly-tapering partition rigidly fixed between said shank-seating sockets; a vertically-movable cross-head in the slot of the partition; shouldered jaws carried by said cross-head; and an upwardly-tapering shank 105 for each socket.

6. An underreamer comprising a stock provided with a socket in its lower end; a stationary slotted partition fastened in the socket and extending from side to side thereof to form 110 two shank-seating sockets to seat the shanks of two jaws on opposite sides of said partition; a jaw-carrying head moving in the slot of said partition; means for yieldingly holding said head up; and jaws carried by said head and having shanks seated in said sockets 115

7. An underreamer comprising a stock provided with a plurality of tapering sockets in its lower end; a stationary, vertically-slotted partition separating the socket; a jaw member; a tapering shank for said jaw member, 120 said shank being provided with a cross-head socket in the extended plane of said slot, a like jaw member having its shank seated in an opposite socket of the stock; a cross-head to play in the slot and having opposite ends seated 125 in the sockets of the shanks, respectively, and having an upwardly-extending stem; means for yieldingly holding up the stem cross-head and jaws; a spring-pressed bolt normally extending across the slot in the path of the cross- 130

head to lock the cross-head against lowering, said bolt having at its upper end a beveled portion; a spring for normally holding the bolt in its locking position; and means adapted to be engaged by the well-casing to bring the bolt into position with the beveled portion thereof in the path of the cross-head.

In testimony whereof we have signed our

names to this specification, in the presence of two subscribing witnesses, at Los Angeles, 10 California, this 28th day of November, 1899.

THOS. A. O'DONNELL,
ARTHUR G. WILLARD.

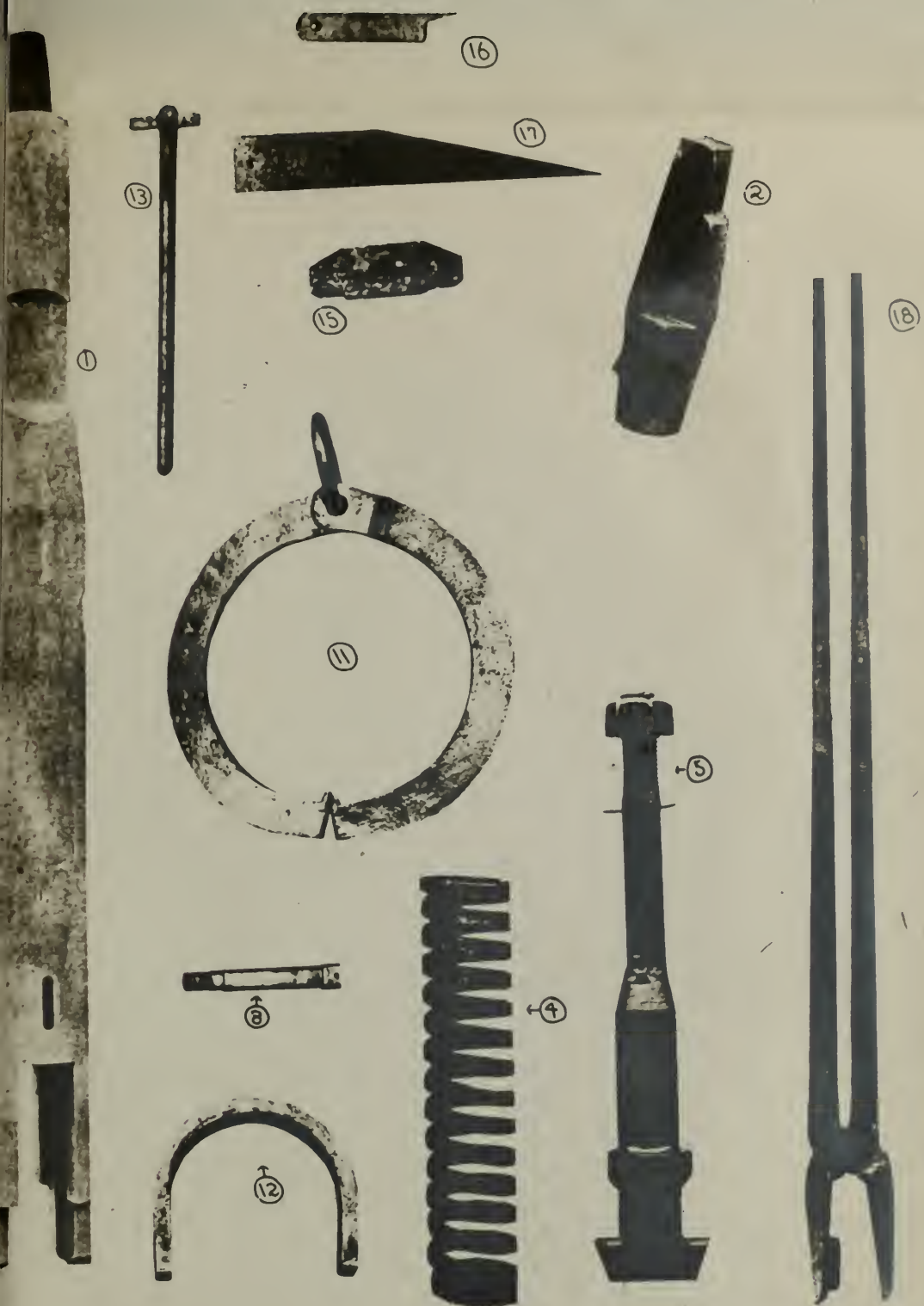
Witnesses:

JAMES R. TOWNSEND,
FRANCIS M. TOWNSEND.

[Endorsed]: Wilson vs. U. Tool. O'D. & W. Patent. U. S. Dist. Court, Southern Dist. of California, Southern Division. Wilson v. Union Tool. A-4—In Equity. Defendant's Exhibit O'Donnell & Willard Patent. July 23, 1915. I. Benjamin, Notary Public. [824]

**Complainant's Exhibit Wilson Unassembled Under-
reamer—Photograph.**

[Endorsed]: Wilson vs. Union Tool Co. A-4—
B-62—Consolidated. Complainant's Exhibit Wilson
Unassembled Underreamer Photo. Leo. Longley,
Notary Public. Aug. 30, 1915. Graham Photo Co.,
110½ So. Broadway, Los Angeles, Cal. [825].



**Complainant's Exhibit Wilson Underreamer
Handbook.**

[Endorsed]: 29. U. S. District Court, Southern District of California, Southern Division. Wilson v. Union Tool Co. In Equity, A-4. Complainant's Exhibit Wilson Underreamer Handbook, Los Angeles, Cal. March 24, 1914. I. Benjamin, Notary Public. [826]

229
U.S. District Court, Southern
District of California,
Southern Division

Wilson } In Equity
Union Tool Co } a-4

Compliments Exhibit
Wilson Under-Reamer Handbook
Los Angeles, Cal., March 4, 1914

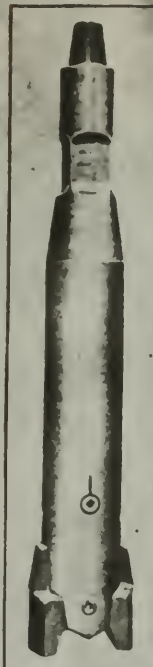
J. Pruzanin
Notary Public

The WILSON UNDER- REAMER

First Pat. July 7, 1909

2nd Pat. Dec. 19, 1911

Patented July 31, 1906



Manufactured by the

Wilson & Willard
Mfg. Co.

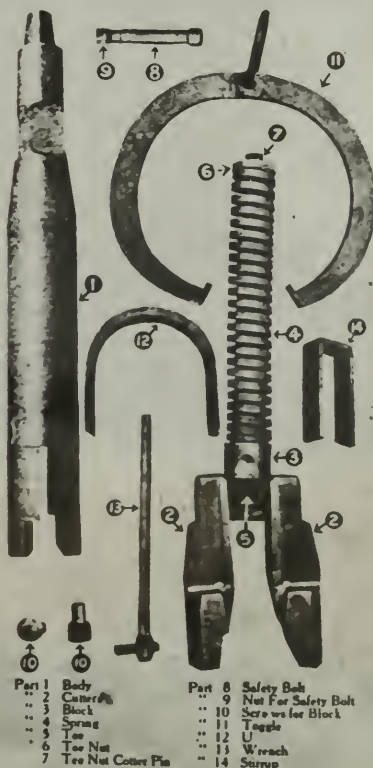
Santa Fe Avenue
Between Alamo and 15th

LOS ANGELES. - CAL.

Telephone Main 6082

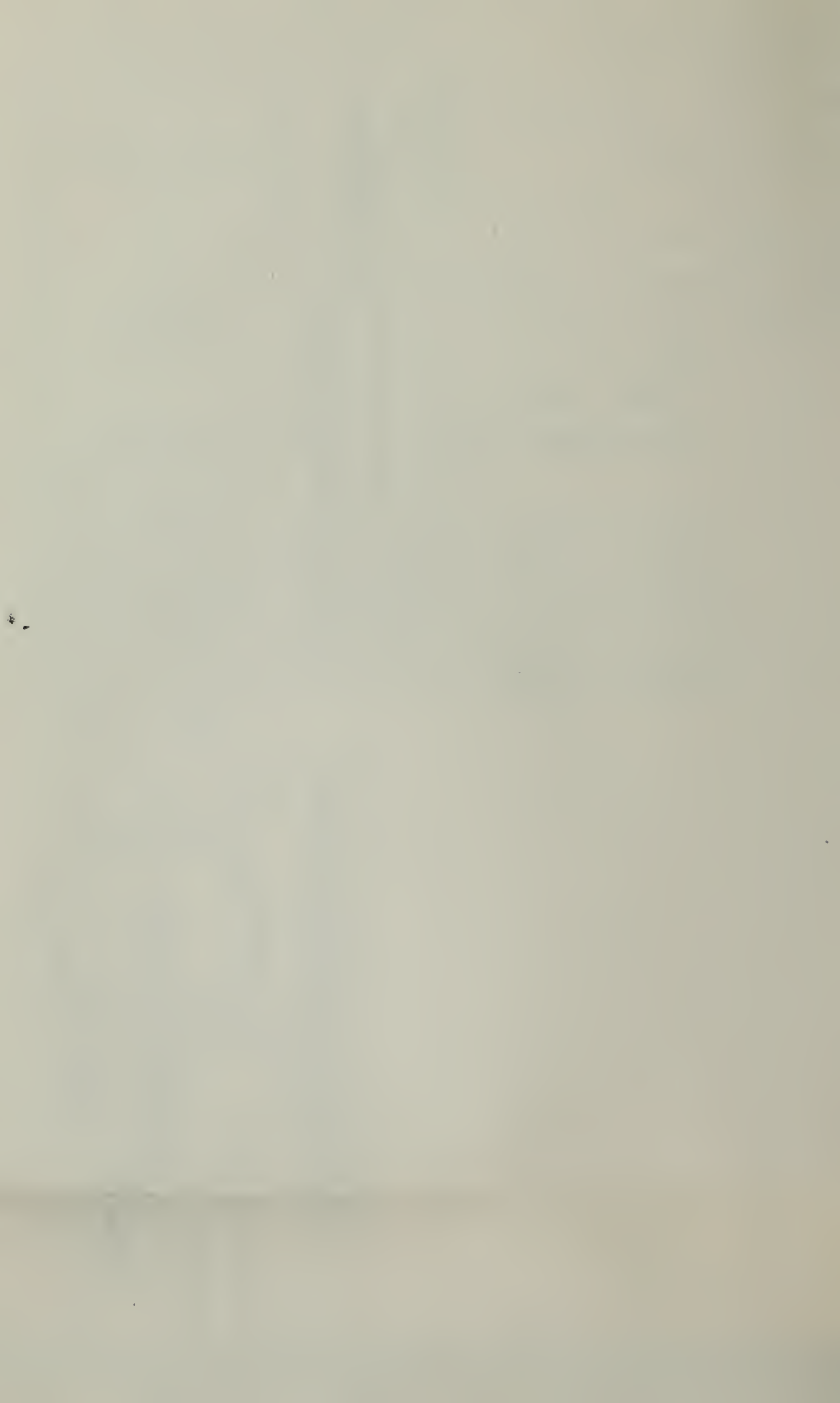
RAUMORDT PUB. CO.

List of Wilson Under-Reamer Parts



- Part 1 Body
2 Cutter
3 Block
4 Spring
5 Tee Nut
6 Tee Nut
7 Tee Nut Cutter Pin

- Part 8 Safety Belt
9 Nut For Safety Belt
10 Screws for Block
11 Toggle
12 U
13 Wrench
14 Straps



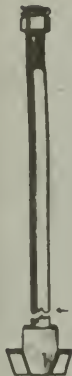
Don't like to lose UNDER-REAMER CUTTERS in the hole, do you?

Don't like to have to tie the reamer cutters together to get the reamer down the casing, do you?

Don't like to break UNDER-REAMER CUTTERS, do you?

Don't like to buy new CUTTERS so often, do you?

Why do you use a reamer which is not guaranteed against breakage? Well, you don't have to. Buy WILSON UNDER-REAMERS and stop all those troubles. Yes, the new WILSON UNDER-REAMER will stop all those troubles for you. You don't believe it? Look here and we'll prove it.



If that "T" should break here the cutters could not be lost in the hole, because the SAFETY BOLT would prevent it. They could not get off.



Suppose, for example, the "T" should break here. You couldn't lose but one cutter, could you? The other one would still be firmly in place on the other part of the "T," don't you see?



"T" FOR 8-INCH REAMER.

The WILSON UNDER-REAMER CUTTERS are attached to the reamer by a solid forged "T," or cross, like this. The cutters can't get off unless it breaks. Note the dimensions. See how much stronger it is than the "Key" used by other Reamers. Ours won't break. It can't get loose and come out like their "Key."



See that SAFETY BOLT? Nothing like it on any Reamer but the WILSON. Nothing on other reamers to hold the cutters when the key breaks, or comes out, is there?

Now, if the key on other Reamers breaks or comes out, both of their cutters are sure to be lost. You know that, and you would have twice the trouble the Wilson Reamer would give you if it were possible to break our "T."

Now isn't it plain to you that it is about impossible to lose the cutters off of the WILSON REAMER?



All who have used the WILSON UNDER-REAMER know that its cutters close together more completely than any other. When they are drawn down there is only the safety-bolt between them; hence they collapse completely together. The ends of the cutters, even though they be dressed out fully, cannot catch on the joints of the casing. Consequently, a WILSON UNDER-REAMER will go down the casing without tying the cutters together.

Simple, isn't it?

It is a big advantage, too, as other reamers must be run to the bottom of the hole to open, or spread the cutters, and they often give much trouble to draw up through the shell or rock formation to begin reaming. Many times the cutters are lost off other Reamers doing so.



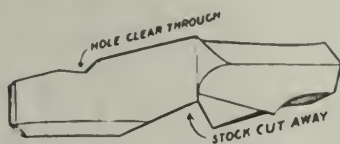
Now here is a WILSON UNDER-REAMER CUTTER. Note its strength at "A."



Suppose we should cut the stock out at the dotted lines, as shown here.



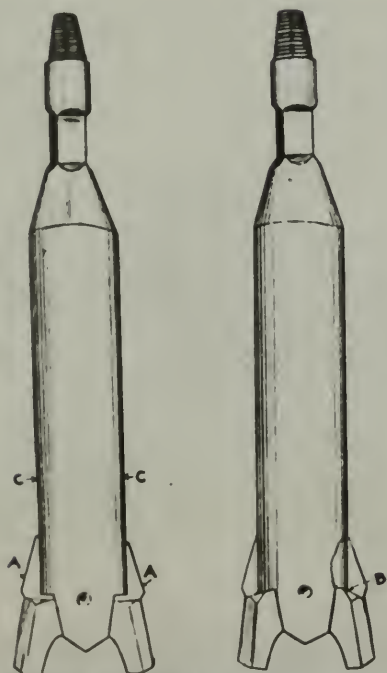
The cutter would then look something like this. It is very evident that the cutter has been badly weakened.



The cutters of other Reamers are cut away just like that, and, of course, are weak at those points, as shown in above cuts.

Now compare it with the WILSON CUTTER above.

The new style WILSON CUTTERS are the strongest. You can see that.



See page 9 for description

Notice the WILSON REAMER avoids the damaging thrust and wear at the point marked "A" by leaving a space between the cutters and the reamer body. (See page 8.) The first Reamer we made allowed the cutters to bear against the reamer body at that point. After some use the reamer body broke out, as shown by figure "B." We have not used that point as a bearing since, and don't propose to weaken our Reamers again by that bearing. You see, the cutters acted like a large cold chisel, and finally split the body, as shown at point "B."

What good could that bearing do anyway? The thrust bearings at point "C" are more than ample for their purpose. And the dove-tails on the WILSON REAMER BODY and on the cutters are twice as strong as is needed. Of all the great number of WILSON REAMERS in use, only one has broken the dove-tails of the body, or cutters, and that was the one which used that bearing! It is poor construction. We don't want it.



NO JOINT IN THE BODY OF WILSON REAMERS.

When you use a WILSON UNDER-REAMER you run no risk of the body coming unscrewed, as it has no joint in the middle. It is a solid forging. You know the trouble other under-reamers give when the body comes unscrewed and leaves a lower half of it in the hole. That causes the worst fishing job imaginable.

No such trouble with the WILSON UNDER-REAMER.

10

Now, in addition to all the above decided advantages the WILSON UNDER-REAMER offers over any other, it is *absolutely guaranteed against breakage while in ordinary use*. We cannot, of course, guarantee cutters against breakage due to incorrect tempering, nor can we guarantee the Reamer against breakage caused by running the Reamer on any steel or pipe in the hole, but it is guaranteed against all breakage while in usual use. *No other Reamer is guaranteed.*

Now, you see, we are right. Use the WILSON UNDER-REAMER, and stop your reamer troubles. Try one, and if it is not a better reamer than any other make, you may return it and we will cancel our charge for it.

TAKE GOOD CARE OF YOUR UNDER-REAMERS.

Many operators will pull an Under-Reamer out of a wet, muddy hole, set it aside in the derrick, or haul it over to the toolhouse, and even sometimes throw it out on the ground in the rain and mud, and allow it to remain in that condition for days, and sometimes weeks or months, then when they do have use for it, and wish to take the cutters out, they find that the cutters have rusted fast in place, and more frequently find the pins or heavy screws and safety bolt rusted so that they cannot be

12

Here is the reason the WILSON CUTTERS last longer than the cutters of other Reamers. You have seen that the WILSON CUTTERS close together more completely, which throws the cutting ends further toward the center, and gives them greater clearance in the casing. Now this *greater clearance* enables the operator to use cutters which have been worn off short, and still they will go down the casing, even when well dressed out, and the cutters will still ream the hole big enough to let the casing follow.

THE WILSON UNDER-REAMER CUTTERS will save you 40% of the new cutter expense.

The dotted lines show how much of the WILSON CUTTERS may be used.



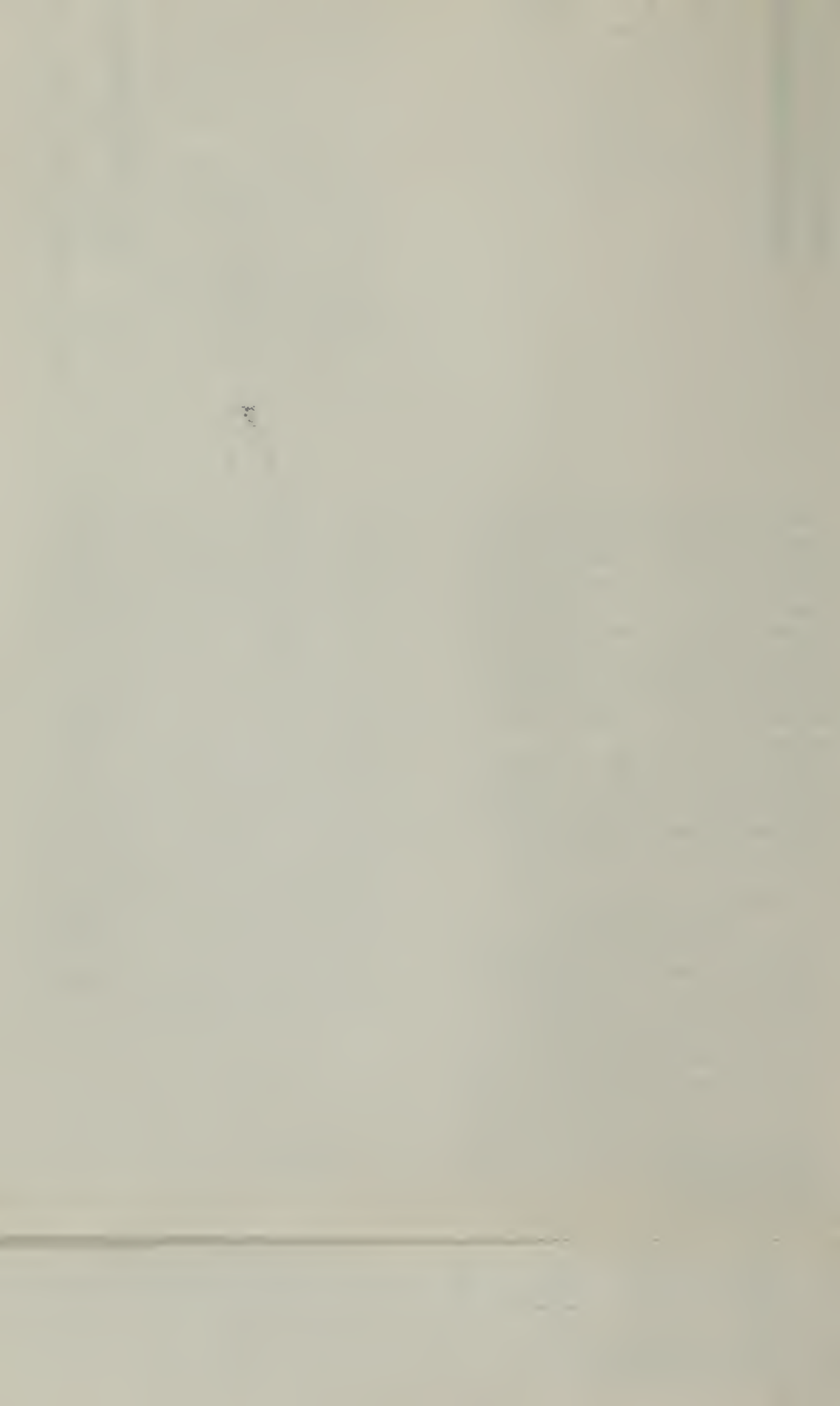
11

removed, and then they blame the Under-Reamer and say it is no good. Now those same operators would probably be very painstaking in the care they would exercise in cleaning and oiling thoroughly a good buggy, if it had been on muddy roads, before placing it in the buggy shed. Now why is it that they will not give an Under-Reamer as good care as they would a buggy? Both are intended to be used in the mud, but the Under-Reamer probably costs two or three times as much as the buggy, and it is far more important that it should be in good working order.

Take care of your Under-Reamer if you want it to do good work. When you are through with it for a time, clean it thoroughly and remove the safety bolt and screws, and thoroughly lubricate them before putting the Reamer away in a toolhouse. The next time you have an occasion to use it, you will have no trouble to get it apart.

Keep the block screws well lubricated with tallow or any other hard grease.

12



KEEP THE UNDER-REAMER CUTTERS DRESSED OUT FOR CLEARANCE.

Every driller knows that an Under-Reamer with its cutters dressed out for clearance runs better, will ream faster, the casing will follow better, and the Reamer will not "stick" and "plunge." Still how often do we see Under-Reamer cutters which are "dubbed" off at the ends until the Reamer could do nothing else but wedge or plunge in a shell with its cutters in such a condition. When a Reamer is in that condition the principal danger in running an Under-Reamer commences, and it wears out many times as fast. A much greater strain is thrown on the cutters, on the "T," and on the spreading bearings. It is very poor practice to run an Under-Reamer in that condition.

OUR PATENTS.

The WILSON UNDER-REAMER PATENT covers the following forms of construction absolutely:

First, an Under-Reamer Body terminating in prongs; said prongs terminating in lugs or projections forming spreading bearings to hold the cutters apart.

Second, an Under-Reamer Body terminating in prongs forming a fork, said prongs ter-

11

minating in prongs forming a fork, even though the prongs do not have the projecting ends or wedges for expanding the cutters and holding them apart, and at the same time have dove-tail shoulders on the inner faces of the prongs, without infringing the WILSON PATENT.

Again, no one else can manufacture an Under-Reamer cutter having a shank with dove-tail shoulders on said shank, the body of which cutter extends at right angles on either side of the shank forming shoulders, and having bearing faces on inner sides of those shoulders, without infringing the WILSON PATENT.

INSTRUCTIONS FOR DRESSING UNDER-REAMER CUTTERS.

The following instructions are given by one of the best Oil Well Tool blacksmiths in the State of California, and a man who has spent a lifetime in working and tempering all grades of Tool Steel.

First, care should be exercised to heat no more of the cutting end of the reamer-cutter than is necessary to enable the Tool Dressers to upset the cutter and dress it out to size. With the standard grade of bit steel, this heat should not be above a cherry red.

Second, after the cutter has been dressed to size, allow the cutter to cool off thoroughly in

minating in lugs or projections having beveled-end faces for expanding the cutters.

Third, an Under-Reamer Body terminating in prongs forming a fork, said prongs having dove-tail shoulders on their inner faces for the purpose of holding the cutters in place.

Fourth, an Under-Reamer Body terminating in prongs forming a fork, said prongs having dove-tail shoulders on their faces, and having projecting lugs or wedges for expanding the cutters, and with spreading bearings to hold the cutters apart.

Fifth, an Under-Reamer Cutter having shank with shoulders on said shank, and body of cutter having shoulders projecting at right angles with the shank, with bearings on the inner faces of said shoulders.

Our patents cover not only the above-mentioned features, each one of them separately, but also in the various combinations of those features. So completely does our patent cover the invention, that it is impossible for anyone to manufacture an Under-Reamer Body which terminates in prongs forming a fork, which prongs terminate in lugs or wedge-like projections, and with or without the dove-tail shoulders on the inner surfaces, and with or without the beveled-end bearings for expanding the cutters, without infringing the WILSON PATENT. Nor can an Under-Reamer be made terminat-

15

the air through and through—do not cool it in water.

Third, after the cutter has been cooled off thoroughly through and through—not only on the outside, but on the inside as well—give the cutter another heat, or the tempering heat. Heat the lower end of the cutter only, and that up to a cherry red—no hotter than a cherry red—then plunge the entire cutter completely under water and allow it to remain completely submerged until it is thoroughly cold.

Now if the above instructions are observed, the Tool Dressers will have no trouble from "cracked" or "split" Under-Reamer Cutters, and the cutters will be sufficiently hard.

Many Tool Dressers do not realize that an Under-Reamer Cutter, which has been in a fire for a good while and heated thoroughly through and through—not only on the outside, but clear through into the center—when dressed to size with that heat, and when it has cooled to a low cherry red on the outside, that the inside of that cutter may still be up to a white heat. If it is dipped under water in that condition, the outside is chilled, but the inside of the cutter will continue to shrink as it cools off long after the outside of the cutter has been black. This interior shrinkage is the cause of the "cracking" or "splitting" of Under-Reamer Cutters when tempering. Any high carbon Tool Steel will

do the same thing under those conditions. "Cracked" or "split" cutters are very, very seldom the fault of the steel—the fault lies with the Tool Dressers.

Tool Dressers know that it is the large cutters which crack or split when tempering. Why don't the small cutters do so?

Simply because they cool thoroughly quicker and consequently more uniformly. When they have cooled on the outside, the interior will be very nearly cool also. Hence, they do not shrink irregularly and split as the large cutters do, when dipped in water while hot clear through. If the breakage was due to the steel, the small cutters also would crack or split when tempering.

PRICE LIST WILSON UNDER-REAMERS.

Size.	Pin.	Price.
4½"	1½ x 2½-8	\$125.00
5"	2 x 3-7	140.00
5⅝"	2 x 3-7	200.00
6"	2 x 3-7	215.00
6⅝"	2 x 3-7	220.00
7"	3 x 4-7	225.00
7⅝"	3 x 4-7	250.00
8"	3 x 4-7	265.00
9"	3 x 4-7	275.00
9⅝"	3 x 4-7	300.00
10"	3 x 4-7	310.00
11"	3 x 4-7	325.00
11⅝"	3 x 4-7	350.00
12½"	3 x 4-7	385.00
13"	3 x 4-7	425.00

Size.	CUTTERS.	Price Per Set.
4½"		\$25.00
5"		30.00
5⅝"		30.00
6"		32.00
6⅝"		35.00
7"		36.00
7⅝"		40.00
8"		42.00
9"		45.00
9⅝"		48.00
10"		50.50
11"		52.50
11⅝"		55.00
12½"		58.00
13"		60.00

F. O. B. Los Angeles.



**Complainant's Exhibit Copy of Letter of Notice to
Defendant.**

(Copy)

Phone A-3212.

Federal Court Practice.

Patent Causes.

Patents.

Trade Marks.

Copyrights.

RAYMOND IVES BLAKESLEE, Lawyer and
Patent Solicitor.

728-729-730 California Building.

Cor. So. Broadway and Second St.

Los Angeles, Cal., Feb. 3, 1913.

(Registered, Return
Receipt Demanded.)

Union Tool Company,
Palmetto & Mataeo Sts.,
Los Angeles, Cal.

Gentlemen:

My client, Elihu C. Wilson, patentee and owner of U. S. Letters Patent No. 827,595, issued to him July 31, 1906, for Underreamers, has instructed me to again call to your attention and give you notice of the issuance to him of said Letters Patent No. 827,595; and further has instructed me to give you this notice, in addition to notice heretofore given you, that you are infringing said Letters Patent No. 827,595, in and by the manufacture, use, sale and leasing of underreamers.

My said client has further instructed me to call upon you to desist from any and all acts of infringe-

ment of said Letters Patent, and to account to him for all damages and profits for present and past infringement of said Letters Patent and flowing from the manufacture, use, sale and leasing by you of any and all such underreamers.

It is further requested that you signify in the immediate future, in writing, that you will comply with the notice and demand, herein made, and will respect said Letters Patent and the monopoly therein and thereby conveyed to my client. Unless you so signify in writing, to my client or myself within ten days from date, your failure so to do will be construed as an intention to continue said infringing acts and to refuse to comply with the notice and demand herein given and made. In the [827] event Union Tool Co. #2.

of your failure to comply with the notice and demand herein given and made, suit will be commenced against you, and the court of competent authority will be petitioned for an injunction restraining you from further acts of infringement of said Letters Patent, and for an accounting of all profits and damages in the premises, and such further relief as may be proper.

This notice is directed to you, and to your officers, attorneys, agents, workmen and employees.

Very respectfully,
RAYMOND IVES BLAKESLEE.

RIB/DC.

Separate card.	Penalty for Private
Post Office Department	use to avoid payment
Official Business.	of postage, \$300.
Original Reg. No.	(Postmark of De-)
89508.	(livery Office.)

Return to:

Raymond Ives Blakeslee	(and Date of De-)
(Name of Sender)	(livery.

Street and Number,)

or Post Office Box,) 728-29-30 Cal. Bldg.

LOS ANGELES,

CALIFORNIA.

This card must be neatly and correctly made up and addressed at the post office where the article is registered.

The postmaster who delivers the registered article must see that this card is properly signed, legibly postmarked, and mailed to the sender without envelope or postage.

(Over)

REGISTRY RETURN RECEIPT.

Form 1548.

Received from the postmaster registered article, the original number of which appears on the reverse side of this card.

Date of Delivery 2/4/15, 19—.

(To be filled in by person signing receipt.)

When delivery is made to an agent of the address-

see, both addressee's name and agent's signature must appear in this receipt.

UNION TOOL CO.,

Signature or name of addressee.

FIELD,

Signature of Addressee's agent.

(Postmark) : Los Angeles, Cal., Feb. 4, 7:30 P. M.

[828]

A registered article must not be delivered to anyone but the addressee or the person in whose care it is addressed, except upon addressee's written order or a written order from the sender transmitted by the mailing postmaster and duly verified.

When the above receipt has been properly signed, it must be postmarked with the name of delivering office and actual date of delivery and mailed to its address, without envelope or postage.

Separate slip.

No. 69,508.

Receipt for registered mail.

(Postmark)

Los Angeles, Cal.,

Feb. 3, 1913.

Registered.

Return Receipt Demanded.

This receipt represents a letter or parcel registered at the post office indicated by postmark. Inquiries concerning registered mail should state the number of the article, date of its registration, and the names and addresses of the sender and addressee. The sender of the article represented by this receipt should write the name and address of the addressee on the reverse side.

1 class postage prepaid. Postmaster, per C.

[Endorsed]: (714) U. S. District Court, Southern District of California, Southern Division. *Wilson v. Union Tool Co.* In Equity, A-4. Complainant's Exhibit Copy of Letter of Notice to the Defendant. Los Angeles, March 24, 1914. I. Benjamin, Notary Public. [829]

Complainant's Exhibit Wilson File Wrapper and Contents.

2-390.

UNITED STATES OF AMERICA.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To all to whom these presents shall come, Greeting:

THIS IS TO CERTIFY that the annexed is a true copy from the Records of this Office of the File Wrapper and Contents in the matter of the

Letters Patent of

Elihu C. Wilson,

Number 827,595,

Granted July 31, 1906,

for

Improvement in Underreamers.

IN TESTIMONY WHEREOF I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the City of Washington, this 18th day of March, in the year of our Lord one thousand nine hundred and fourteen and of the Independence of the United States of America the one hundred and thirty-eighth.

[Seal]

J. T. NEWTON,

Acting Commissioner of Patents. [830]

NUMBER (SERIES OF 1900).

289,380

1905.

DIV. 38

(EX'R'S BOOK) 219-1

, 190

PATENT No. 827,595.

Name—Elihu C. Wilson.

Of Bakersfield.

County of—

State of California.

Invention—Underreamer.

ORIGINAL.

RENEWED.

Division of App., No.
PARTS OF APPLICATION FILED
, filed

Petition	Nov. 28, 1905	, 190
Affidavit	" " , 1905	, 190
Specification	" " , 1905	, 190
Drawing 2 shs.	" " , 1905	, 190
Model or Specimen	, 190	, 190
First Fee Cash, \$15.00		
	Nov. 28, 1905	, 190
" " Cert.	190	, 190
Appl. filed complete	Nov. 28, 1905	, 190
Examined A. P. Shaw ex.	July 10, 1906	, 190
Countersigned, W. W. MORTIMER,		, 190
For Commissioner.	For Commissioner.	
Notice of Allowance,	July 12, 1906	, 190
2 Cert.		
Final Fee Cash	Dated June 13, 1906	, 190
" " Cert. \$20	June 18, 1906	, 190
Patented—July 31.		, 1906
Associate Attorney.		

Attorney—JAMES R. TOWNSEND,

430 Bradbury Bldg.,

Los Angeles, Cal.

3 Name— Serial Number—
Patent No. — Date of Patent. [831]

\$ 15 RECEIVED.

NOV. 28, 1905. Ck.

CHIEF CLERK. J.

U. S. PATENT OFFICE.

James R. Townsend.

289,380 Paper No. 1/2

Townsend Bros.

MAILED

NOV. 22, 1905.

James R. Townsend.

Los Angeles, Cal.,

Elihu C. Wilson,

Underreamer.

HON. COMMISSIONER OF PATENTS.

Sir: We herewith hand you Petition and Power of Attorney, Specification, Oath and two sheets of Drawings, in the matter of the above-entitled application for U. S. Patent.

Also enclosed find our check for \$15.00, in payment of filing fee thereon.

Kindly file, acknowledge receipt, and oblige,

Yours respectfully,

JAMES R. TOWNSEND.

ADAM. [832]

MAIL ROOM.

NOV. 28, 1905.

U. S. PATENT OFFICE. ~~Townsend Bros.~~

REGISTERED ATTORNEYS.

No. ~~370.~~

in the

United States Patent Office

James R. Townsend ~~Francis M. Townsend.~~

Los Angeles, California.

PETITION AND POWER OF ATTORNEY.

To the Hon. Commissioner of Patents.

Your petitioner Elihu C. Wilson whose Post Office address is Bakersfield, Kern County, California, a citizen of The United States residing at Bakersfield in the county of Kern, and State of California, prays that letters patent may be granted to him for the ~~improvement in~~ Underreamer set forth in the annexed specification and he hereby appoints the firm of ~~TOWNSEND BROS.,~~ the individual members of which firm are James R. Townsend ~~and Francis M. Townsend~~ of Los Angeles, California, his attorney with full power of substitution and revocation to prosecute this application, to make alterations and amendments therein, to receive the patent and to transact all business in the PATENT OFFICE connected therewith.

ELIHU C. WILSON.

SPECIFICATION:

To all Whom it May Concern:

Be it known that I, Elihu C. Wilson, a citizen of the United States, residing at Bakersfield, in the County of Kern, and State of California, have in-

vented a new and useful UNDERREAMER, of which the following is a specification. [833]

Objects of this invention are to provide an underreamer of superior strength and of superior width and expansion of cutters so as to enable reaming as great a portion of the circumference of the hole as possible at each stroke; to ensure greater safety against losing the cutters from the body while reaming; to avoid the necessity of a middle joint in the mandrel or reamer body.

Insert E' /E'

By this invention it is possible to increase the strength of the cross or tee which suspends the cutters. In this invention a cross or tee formed of a single forging is provided for suspending the cutters.

Another decided advantage is simplicity and convenience of attaching and removing the cutters and suspending devices from the reamer body.

Another advantage is facility of collapsing the cutters I so construct the mouth of the underreamer as to dispense with stock between the collapsed cutters, thus enabling the cutters to close together. This feature makes extreme expansion possible, and makes the use of maximum amount of stock in shanks of cutters possible, thus insuring maximum strength of cutters.

The accompanying drawings illustrate the invention:

Figure 1 is a view of the underreamer in a casing just before it has passed through the shoe of the casing, the parts being collapsed.

Fig. 2 is a view looking at the bottom of Fig. 1.

Fig. 3 is a view of this newly invented underreamer in a well, the same having just passed through the casing shoe, and expanded for reaming the hole below; portions are shown in mid-section.

Fig. 4 is a view looking at the bottom of Fig. 3.
[834]

Fig. 5 is a view of the reamer body at right angles to Figs. 1 and 2.

Fig. 6. is a view looking at the bottom of Fig. 5.

Fig 7 is a front view of a cutter detached.

Fig. 8 is an edge view of a cutter at right angles to Fig. 7.

Fig. 9 is a view of the inside or back of the cutter.

Fig 10 is a view looking down on the top of the cutter.

Fig. 11 is a view of the cross.

Fig. 12 is a view of the cross at right angles to Fig. 11.

Fig. 13 is a side view of the spring seat block detached.

Fig. 14 is a bottom view of the same.

1 designates a hollow body of an underreamer terminating in ~~forks 2~~ which terminate in downwardly-projecting lugs 2'. ^{to spread the cutters}

~~3 designates ways formed by the forks.~~ 4 designates the cutters which are interchangeable; 4¹, the cutter shank; 4², bearing shoulders of the cutters to engage inside the ways ~~3~~; 4³, expansion bearing faces of the cutters, ^{on the sides of said cutters.}

5 is a cross; 5' the stem of the cross, and 6 the spring which actuates the cross. The parts 5, 5', constitute spring-actuated means for actuating the cutters to expand the same.

7 is a block forming a seat for the spring 6. One or more dowel pins 8 may be provided as means for holding the block or spring seat 7 in place. 9 designates the spreading bearings, for holding the cutters 4 apart, and 10 the down-thrust bearings for the cutters. 11 is a detachable cross-piece in the form of a bolt secured by a nut 12. 13 is an angular socket in the outer face of one of the forks around the bolt-hole 14 is said fork. The nut 12 is conformed to the angular socket, and the bolt 11 is provided with an angular socket 15 in its head to receive a

-3-

wrench, not shown, for screwing the bolt into the nut.

The expansion bearing faces 4³ terminates Per B at their upper ends in rounded corners or " " bearings 16 to ride more readily over the beveled end faces 17 of the downwardly-projecting lugs 2', to engage said bearings for expanding the cutters, 18 designates recesses in the inner faces of the cutters for engaging the ends of the cross 5.

19 and 20 indicates the usual tension nut for the spring 6 and the cotter-pin for securing the same.

To assemble the underreamer, the block 7 will first

be placed on the stem 5' of the cross 5, and the spring 6 is then adjusted and secured in place by the nut 19 and cotter-pin 20. Then the cutters are placed on the ends, respectively, of the cross 5 which seat in the recesses 18 therefor. Then the parts thus assembled are inserted into the hollow mandrel and brought into the position shown in Fig. 3, whereupon the dowel-pins 8 are inserted and the cross-piece formed of the bolt 11 is then inserted; the nut 12 is placed in its angular socket 13, and the bolt or cross-piece 11 is then screwed home. The underreamer is then in condition for operation.

To use the underreamer, the cutters will be drawn down below the downwardly-projecting 2', thus collapsing the same into the position shown in Fig. 1, whereupon the underreamer will be inserted into the pipe or casing in the usual manner and allowed to descend. When it has passed through the shoe, as shown in Fig. 3, the spring operates in the usual manner to draw the cross 5 up, thus bringing the cutters into the expanded position shown in Fig. 3. The rounded shoulders 16 ride readily over the beveled faces 17, and the upper ends of the cutter-stems seat against the down-thrust bearings 10, and the bearing shoulders 4² of the cutters engage the ways 3 of the fork prongs or members 2, thereby being solidly held during the operation of underreaming. The spreading bearings 9 of the lugs 2' engage the expansion [836] bearing-faces 4³ of the cutters at the same time so that the tool is practically a unit during the operation of underreaming.

30 designates the usual shoulders on the cutters for

drawing the same in when the tool is removed through the pipe or casing 40.

It is advisable that the lower ends of the forks 2 should not form down-thrust bearings for the cutters as there would otherwise be a tendency of crystallization of said forks, which is avoided by making the down-thrust bearings at 10 only.

The cross-piece 11 serves as a brace for the prongs of the fork, and prevents accidental removal of the cutters and tee or cross 5.

insert D ³	What I claim is:-
or B	1. An underreamer ^{body} having projecting lugs at its mouth for expanding cutters.
" "	2. An underreamer ^{body} provided with upper and lower bearings for its expanded cutters, the lower bearing being formed of lugs projecting at the mouth of the reamer.
sub D ⁴	3. An underreamer ^{body} having cutter bearings for the down-thrust and bearings for expanding the cutters, the latter being formed of projecting lugs at the mouth of the reamer.
" "	4. An underreamer having ^{prongs forming} body terminating in a said prongs having shoulders on their inner faces fork to form ways for the cutters.
" "	5. A hollow underreamer body terminating in ^{prongs forming} a fork having shoulders on the inner faces to form forming ways for the cutters, cutters in said ways, a cross in said hollow body for operating said cutters, a spring for operating the cross, a block in the body to form a seat for said spring, and one or more dowel pins securing the block in place.
" "	6. A hollow underreamer body, cutters, a cross inside the hollow body for operating said cutters, a spring for

Insert
B²

operating said cross, a block in said body forming a seat for said spring, and one or more dowel pins for holding the block in place. ^{B²}

per B

7. A hollow underreamer body provided with cutter ways and bearings, cutters in said ways and engaging said bearings, spring-actuated means for actuating said cutters, and a block secured in said hollow body and extending below said bearings to hold the upper ends of the said cutters apart.

per B

7. ~~8.~~ A hollow underreamer body ^{terminating in prongs forming a fork and} provided with ways and down-thrust bearings for cutters, cutters in said ways engaging said bearings, a cross for operating said cutters, a spring for actuating said cross, a block forming a guide for the stem of the cross, and a seat for the cross-actuating spring and projecting below the down-thrust bearings to hold the upper ends of the cutters apart, and means for holding the block in the reamer body.

Insert³
B

per

"

Insert⁴
B⁴

per B

Insert

per D

per E

8. ~~9.~~ A hollow underreamer body ^{prongs forming in ways} terminating in a fork, ^{cutters held-by} said fork means for operating the cutters, and a detachable cross-piece connecting the ends of the fork.

9. ~~10.~~ An underreamer body ^{prongs forming in a fork} terminating in a fork, which forms cutter ways and terminates in downwardly-projecting lugs, and cutters mounted between the prongs of said fork and having shoulders inside the fork and faces to bear on the projecting lugs.

per D

sub E²

10. ~~11.~~ An underreamer having lugs at the ^{sides of the} lower end of its body to hold the cutters apart. ^A

12. An underreamer body terminating in a fork and a cross-piece forming a brace for the prongs of the fork.

13. An underreamer body terminating in a fork, cutters and means for suspending the same in said body, and a cross-piece extending between the prongs below the suspending means.

per B

14. An underreamer body having down-thrust bearings and forks below said bearings, cutters held by said forks and

provided with shoulders to engage the down-thrust bearings, and means for holding the cutters expanded in position with their shoulders in engagement with said down-thrust bearings.

per B 11 15. An underreamer body terminating in ^{prongs forming} a fork having beveled faces at the ends of its prongs, cutters having shoulders to ride over said beveled faces, and means for suspending said cutters in said body.

Insert

In Testimony Whereof, I have hereunto set my
Bakersfield,
hand at Los Angeles, California, this 20th day of
November, 1905.

ELIHU C. WILSON.

In presence of

H. I. TUPMAN.

T. E. KLOPSTEIN.

OATH.

State of California,

Kern,

County of Los Angeles,—ss.

Elihu C. Wilson, the above-named petitioner, being duly sworn, deposes and says that he verily believes himself to be the original, first and sole inventor or discoverer of the ~~improvement~~ Underreamer described and claimed in the annexed specification; that he does not know and does *no* believe that the same was ever known or used before his invention or discovery thereof; or patented or described in any printed publication in any country before his invention or discovery thereof, or more than two years prior to this application; or in public use or on sale

in the United States for more than two years prior to this application, and that no application for patent on said improvement has been filed by him or his legal representatives or assigns, in any foreign country, except as follows:

~~And said states that he is a citizen of the United States and resident of in the County of Los Angeles and State of California.~~ [839]

And said Elihu C. Wilson states that he is a citizen of the United States and resident of Bakersfield in the County of Kern and State of California.

ELIHU C. WILSON.

Subscribed and sworn to before me this 20th day of November, 1905.

[Seal]

H. I. TUPMAN,

Notary Public in and for the County of Kern, State of California.

Notary Public in and for the County of Los Angeles, State of California.

U. S. Patent Office.

Dec 27, 1905.

Division 38.

MAIL ROOM.

Dec. 26, 1905.

289,380 Paper No. 1

U. S. PATENT OFFICE.

Amdt. A

IN THE UNITED STATES PATENT OFFICE.

Division 38

Room No. —

Paper No. 1

Elihu C. Wilson,

MAILED

Underreamer,

To Patent Office

Filed Nov. 28, 1905,

Dec. 19, 1905.

Ser. No. 289,380.

James R. Townsend.

Elihu C. Wilson.

1035

Los Angeles, Cal., Dec. 19, 1905.

Hon. Commissioner of Patents,
Sir:-

Upon further consultation with
the applicant before receiving action from your Office, please
add the following claim in the above mentioned application for
patent; namely:-

sub D6 -18-16. An underreamer having a body terminating in a
A' fork, and cutters suspended between the prongs of the fork, the
per C constructed and arranged to wedge between
" " ends of said prongs being adapted to spread the cutters apart,--

Insert
=6

Very respectfully,
James R. Townsend,
Atty. for Wilson.

Approved
E. C. Wilson

-C-

Div. 38. Paper No. 1.
Address All communications —ing this ap-
"The Commissioner of Patents, plication should give the serial num-
Washington, D. C.," ber, date of filing, title of invention,
and not any official by name. and name of applicant.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

Washington, D. C., January 9, 1906.

MAILED " " "

Elihu C. Wilson,

Care James R. Townsend,

#430 Bradbury Bldg., Los Angeles, Cal.

Please find below a communication from the
your

EXAMINER in charge of the application of for
"Underreamer," filed November 25, 1905. Serial
No. 289,380.

F. I. ALLEN,
THOMAS EWING,
Commissioner of Patents.

The shape of the ways 3 should be illustrated showing how the guides 4² operate.

Claim 1 is rejected on—

Swan, 683,352, Sept. 24, 1901, Artesian & Oil Wells,
Reamers.

Claim 2 to 6, inclusive, are rejected on—

Double, 748,054, Dec. 23, 1903 (Same class).

There is considered to be no invention in substituting dowel-pins for screw-threads to hold in the block, as they are both within the knowledge of an ordinary mechanic.

Claims 7 to 14, inclusive, are rejected on—

Double, 796,197, Aug. 1, 1905 (Same Class).

Claim 16 is objected to as it differs from the patents to Double, cited, only in statements of function.

Claim 15 is allowed.

A. P. SHAW,
Ex.

MEP. [841]

MAIL ROOM
MAR 12 1906
U.S. PATENT OFFICE

U.S. Patent Office
MAR 14 1906
DIVISION 38

289,360 Paper No. 4
Amdt B

IN THE UNITED STATES PATENT OFFICE.

Elihu C. Wilson,
Underreamer,
Filed Nov. 25, 1905,
Ser. No. 289,380.

MAILED
To Patent Office,
MAR 6, 1906
James R. Townsend

Div. 38
Room 378
Paper #2

Los Angeles, Cal., March 5, 1906.

Hon. Commissioner of Patents,

Sir:-

Office letter of January 9, 1906,

and the patents referred to have been considered.

Page 2, last line, cancel "forks 2 which" and substitute - - prongs 2 forming a fork; said prongs having shoulders 2" on their inner faces to form ways 3 for cutters. Said prongs are provided with an - -. Before the period insert - - to spread the cutters apart. - - The clause as amended will read as follows: - - 1 designates a hollow body of an underreamer terminating in prongs 2 forming a fork; said prongs having shoulder 2" on their inner faces to form ways 3 for cutters. Said prongs are provided with and terminate in downwardly-projecting lugs 2" to spread the cutters apart. - -

Page 3, line 1, cancel "3 designates ways formed by the forks." Line 4, change the period to a comma and add - - on the sides of said cutters. - - Line 20, after "corners" insert - - or bearings - -; line 21, before "for" insert - - to engage said bearings - -.

Claims 1 and 2, line 1, after "underreamer" insert - - body - - It is requested that claims 1 and 2 be reconsidered and allowed for the reason that the patents do not show any lugs at the mouth of the underreamer body for expanding the cutters. The term "lugs" can only be applied to projecting parts, and no parts

are shown in the patents which come within the definition of the term "lugs".

Claim 3, line 1, after "underreamer" insert - - body -
-; line 3, before "projecting" insert - - downwardly - -; after
"reamer" insert - - body - -.

Reconsideration and allowance of this claim is requested in view of the foregoing.

Claim 4, line 1, cancel "having a"; after "in" insert
- - prongs forming - -; line 2, after "fork" insert - - , said
prongs having shoulders on their inner faces - - . The claim as
amended reads:

- - 4. An underreamer body terminating in prongs forming a fork, said prongs having shoulders on their inner faces to form ways for the cutters. - -

Claim 5, line 1, after "in" insert - - prongs forming
-; line 2, for "forming" substitute - - having shoulders on the
inner faces to form - - .

Claim 6, before the period insert - - , said blocks and
pins being located entirely above the head of the cross. - -

Cancel Claim 7.

Claim 8 renumber as 7. Line 1, after "body" insert - -
terminating in prongs forming a fork and - -; line 6, after
"spring" insert - - its lower end terminating above the head of
the cross - - .

Claim 9 renumber as 8. Line 1, after "in" insert - -
prongs forming - -; before line 2 insert - - said prongs having
shoulders on their inner faces to form ways, - -; line 2, substi-
tute - - in - - for "held by"; substitute - - ways - - for "fork"
The claim as amended reads:

- - 8. A hollow underreamer body terminating in prongs forming a fork, said prongs having shoulders on their inner faces to form ways, cutters in said ways, means for operating the cutters,

and a detachable cross-piece connecting the ends of the fork. -

26 Claim 10 renumber as 9. Line 1, after "in" insert - -
prongs forming - -; after "fork" insert - - and provided with
shoulders on the inner faces of the prongs - -; line 2, change
"forms" to - - form - -.

Claim 11. renumber as 10. Reconsideration and allowance of this claim is requested in view of the fact that none of the patents show the lugs called for in this claim, it being understood that the term "lugs" is limited to projecting devices, none of which for this purpose is shown in the patents.

per C Cancel claims 11, 12, 13, 14,

Claim 15 renumber as 11. Line 1, after "in" insert - -
prongs forming - -.

Add the following claims:

26 - - 12. An underreamer body terminating in prongs forming a fork, the ends of said prongs being provided with lugs to spread the cutters apart.

13. An underreamer body terminating in prongs forming a fork, said prongs having shoulders on the inner faces to form ways for the cutters, and said prongs terminating in lugs to act as spreaders for the cutters.

14. A hollow underreamer body terminating in prongs forming a fork, said prongs terminating in lugs for spreading the cutters, said lugs having beveled ends to engage bearings on cutters to expand cutters.

15. An underreamer body terminating in prongs forming a fork, said prongs terminating in lugs or projections, said lugs having beveled faces or bearings to expand the cutters, and also faces or bearings for the cutters to rest on after they have expanded to a normal position for reaming.

16. An underreamer cutter having shoulders or projections on its sides to form bearings to rest on the lugs of the underreamer body.

17. An underreamer cutter having shoulders to bear on the lugs of the underreamer body, and having shoulders or projections on its sides to bear against the shoulders on the inner faces of prongs of underreamer body when cutters are expanded to normal position for reaming. --

It is believed that the foregoing is in accordance with the views of the Examiner as expressed in a private interview with the inventor, and the application will now be found in condition for issue.

Favorable consideration is therefore requested.

Very respectfully,

JAMES R. TOWNSEND,

Attorney for Wilson.

JRT-J.

Div. 38

Address

"The Commissioner of Patents,
Washington, D. C.,"
and not any official by name.

Paper No. 4.

All communications—*ing* this application should give the serial number, date of filing, title of invention, and name of applicant.

DEPARTMENT OF THE INTERIOR.

UNITED STATES PATENT OFFICE.

WASHINGTON, D. C., March 21, 1906.

MAILED

" " "

Elihu C. Wilson,

Care J. R. Townsend,

Bradbury Bldg., Los Angeles, Cal.

Please find below a communication from the

your

EXAMINER in charge of the application of for

“Underreamer,” filed November 28, 1905, [845]
Serial No. 289,380.

F. I. ALLEN,
THOMAS EWING,
Commissioner of Patents.

In response to the communication filed March 12, 1906:

Claims 1 to 4, inclusive, are rejected on Double, 748,054, of record, which shows shoulders on the inner faces for guiding the cutters.

Claim 5 is rejected on Double, 748,054, in view of Double, 796,197, of record. The use of dowel pins for the bolt of Double, or the screw-threads shown in—

Swan, 717,469, Dec. 30, 1902, (Same Class); is not considered patentable.

Claim 8 is rejected on Double, 748,054 in view of Double, 796,197, of record, showing a cross-piece at the end of the forks.

Claim 9 is objected to as it is not clear to what “which” in line 2 refers. If “forms” is changed “terminates” should also be changed.

Claim 10 is rejected on Double, 748,054, of record, as not distinguishing therefrom.

Claims 16 and 17 are rejected on Double, 748,054, of record. Furthermore, the article of manufacture cannot be limited by the device with which it is used.

Original claim 16 had not been amended and the objection made in the last Office letter is repeated.

Attention is called to the fact that claims 11, 12, 13, and 14, are directed to be cancelled. In view of other portions of the amendment only original claims 12, 13,

and 14 have been canceled.

Claims 6, 7, 11, 12, 13, 14, and 15, are allowed.

A. P. SHAW,

M. E. P.

Ex. [846]

U. S. Patent Office.

MAR. 28, 1906.

DIVISION 38.

MAIL ROOM.

289,380 Paper No. 5.

MAR. 27, 1906.

Amdt. C.

U. S. PATENT OFFICE.

IN THE UNITED STATES PATENT OFFICE.

MAILED

To Patent Office

Mar. 21, 1906.

James R. Townsend.

Div. 38

Room 378

Paper #3

Elihu C. Wilson,

Underreamer,

Filed Nov. 25, 1905,

Serial No. 289,380.

Los Angeles Cal., March 12, 1906.

Hon. Commissioner of Patents,

Sir: It is noted in my amendment dated at Los Angeles, March 5, 1906, page 3, line 9 should read:

—Cancel claims 12, 13, and 14—, therefore please correct said line to read accordingly.

Claim 16 was overlooked in said amendment there-

fore renumber said claim 16 to be 18.

I amend said claims as follows: Line 3 of the claim
change "adapted to spread" to—constructed and ar-
anged to wedge between —. Last line, cancel
"apart." This claim now clearly sets forth the ar-
angement of the prongs with relation to the cutters
and no reason is seen why it may not be allowed.

Respectfully submitted,

JAMES R. TOWNSEND,

Attorney for Wilson.

AHM-M.

A. H. Merrill. [847]

Div. 58.

Address

"The Commissioner of Patents,
 Washington, D. C.,"
 and not any official by name.

Paper No.

All *communications* this application
 should give the serial number, date of
 filing, title of invention, and name of
 applicant.

DEPARTMENT OF THE INTERIOR.

UNITED STATES PATENT OFFICE.

WASHINGTON, D. C., April 3, 1906.

MAILED

" " "

Elihu C. Wilson,

Care J. R. Townsend,

Bradbury Bldg., Los Angeles, Cal.

Please find below a communication from the

your

EXAMINER in charge of ~~the~~ application ~~of~~ for
 "Underreamer," filed November 28, 1905, Serial
 No. 289,380.

F. I. ALLEN,

THOMAS EWING,

Commissioner of Patents.

In response to the communication filed March 27, 1906;

Claims 12, 13, and 14 were canceled in view of the amendment of March 12, 1906.

Claim 18 as amended is objected to as being indefinite on account of the phrase "constructed and arranged." Such a phrase does not define any structure.

A. P. SHAW,
Ex.

M. E. P. [848]

U. S. Patent Office.

Apr. 17, 1906.

DIVISION 38.

MAIL ROOM.

289,380 Paper No. 7

APR. 16, 1906.

Amdt. D.

U. S. PATENT OFFICE.

IN THE UNITED STATES PATENT OFFICE.

MAILED

To Patent Office

Apr. 10, 1906.

James R. Townsend.

Elihu C. Wilson,

Div. 38

Underreamer,

Room 378

Filed Nov. 28, 1905,

Paper No. 6.

Ser. No. 289,380.

Los Angeles, Cal., April 9, 1906.

Hon. Commissioner of Patents,

Sir: Office letter of March 21, 1906, and the patents referred to have been considered. Amend the specification as follows:

Page 3, after line 4 insert:

—The inner faces of the prongs 2 are parallel, and the sides or shoulders 2'' which form the ways 3 are also parallel; the cutter-shank 4' and its bearing shoulders 4^u are straight; that is to say, the sides or edges thereof are parallel and fit the ways 3.—

D'
per F

4²

After line 12, Page 3, insert:

—The down-thrust bearings 10' are in the nature of shoulders formed by the edges of the forks at the base of the lugs 2'. The prongs 2 of the body are of substantially one thickness throughout, excepting that they are reduced at their lower ends to form lugs for spreading the cutters 4 apart. The edges of the lugs 2' form the spreading bearings 9, and the prongs terminate abruptly in the shoulders 10' at the base of the lugs 2''. This construction affords the necessary operative structure with maximum strength for minimum weight of body.—

D²

At the end of page 5 add:

—It is to be noted that by the construction shown the cutters are quickly expanded at the initial upward movement of the same [849] after escaping the shoe of the casing 40; and that immediately thereafter the cutters are solidly held in the straight and parallel ways 3, and that when the cutters are fully drawn up they seat on the down-thrust bearings 10 and the spreading bearings 9, while the shanks are rigidly held throughout their length. Said spreading bearings are on the lugs 2' which constitute wedges

D³

for wedging the cutters apart, and said bearings are at the sides of the lower ends of the body, thus engaging the outer edges of the cutters to hold the cutters apart, and leaving an open space between the middle portions of the cutters for a greater distance upward from the lower ends of the cutters than would be the case were the cutters held apart by any intermediate portion between the lugs.

I term the cutters "shouldered cutters" for the reason that the rounded corners 16 which extend away from the shank at right angles thereto are in the nature of shoulders, the inner faces 4³, of which engage the spreading faces 9 of the side lugs 2' to brace the cutters and hold them apart.—

Rewrite claims 1, 2 and 3 to read as follows:

1. An underreamer body terminating in prongs
 D⁴ having projecting lugs at their lower ends with
 spreading bearings 9 for holding the cutters
 apart.

2. An underreamer body terminating in prongs
 and provided with upper and lower bearings
 per E the
 for ~~its expanded~~ cutters, said prongs having
 projecting lugs, the edges of which form lower bear-
 ings for holding the cutters apart, and the ends of said
 lugs having beveled end faces.

3. An underreamer body terminating in prongs
 the inner faces of which are provided with straight
 per E parallel ways, ~~the cutters having straight~~
~~shanks fitting said ways,~~ the ends of said

prongs terminating in lugs below said ways to spread and hold the cutters apart.— [850]

I request reconsideration and allowance of claim 4 for the reason that Double 748,054, does not show a cutter body terminating in prongs forming a fork. Upon the contrary, the Double body is provided with a web 6 on each side of which are recesses 4 and 5, there being a slot 7 through the web. The Double underreamer body in #748,054 clearly does not anticipate claim 4 which is limited to the body terminating in prongs forming a fork.

It is thought that the rejection of claim 4 on this reference was an inadvertency, as the applicant advises the writer as follows:

“You can remind the Examiner, that he and I investigated that particular point very carefully, while I was in Washington, and we discovered that no patent has ever been issued, covering on forked mouth reamers with shoulders on their inner faces. He stated without hesitation, that I was entitled to that claim. The Double patent certainly does not cover on the reamer terminating in prongs forming a fork. He apparently quite overlooks the difference in the construction of the two reamers. I will ask you to again request an allowance of that claim.”

In view of the foregoing I request reconsideration and allowance of claim 5. The downwardly-extending lugs 3, 3' in the Double Patent #796,197 do not suggest the prongs having shoulders on the inner faces to form ways for the cutters, and since Double #748,054 does not suggest any forked structure, and Double does not in fact in either patent show the

structure claimed in the first two lines of claim 5; nor are the dowel pins or the rest of the claimed combination found in any of the patents in the relation stated, it is thought this claim, upon reconsideration, will be allowed.

Please reconsider and allow claim 8 in view of the foregoing. Double #748,054, as above stated, does not show a fork, and Double #796,197, issued long after, does not show any [851] shoulders on the inner faces to form the ways. It is believed that the Examiner will see his way to allow this claim.

Claim 9, line 2, change "terminates" to—terminate.

Claim 10, line 1, before "lower" insert—sides of the.

Cancel claims 16 and 17 and substitute therefor:

—16. An underreamer cutter having two shoulders and a bearing face on the inner side of each of
D⁵ the two shoulders of the cutter.

17. An underreamer-cutter having a shank and a shoulder on either side of the shank of the cutter, each of said shoulders projecting at right angles to the shank of the cutter and having a bearing face on its inner side.

Rewrite claim 18 to read as follows:

—18. An underreamer having a body terminating in a fork, and cutters suspended between the
D⁶ prongs of the fork, the ends of said prongs con-
stituting wedges to wedge between the cutters.

Insert E³ It is believed that the foregoing avoids all objection and places the case in condition for issue.

The final fee is herewith transmitted and it is requested that the patent issue as early as possible.

Very respectfully,

JAMES R. TOWNSEND,

Attorney for Wilson.

JRT-J. [852]

Account.

MAIL ROOM.

289,380 Paper No. 8.

APR. 16, 1906.

Amdt. (drg.)

U. S. PATENT OFFICE.

IN THE UNITED STATES PATENT OFFICE.

MAILED

To Patent Office

APR. 10, 1906.

James R. Townsend.

E. C. Wilson,

Underreamer,

Filed Nov. 28, 1905,

Ser. No. 289,280.

Div. 38

Room 378

Paper #5

Los Angeles, Cal., April 9, 1906.

Hon. Commissioner of Patents,

Sir: The application has been considered in view of Office letter dated March 21, 1906.

Additional reference characters appear to be required on the drawing. Please add to the drawing the character 2".

In Figure 5 apply said character immediately below the character 3 and connect it with the solid lines at the left and right.

In Fig. 6 apply the character 2" inside the circle and connect the same by leaders with the lower faces

of the two triangles which are above said circle and the upper faces of the two triangles which are below said circle.

In Figs. 1, 5, and 6, apply the characters 10', and connect the same by leaders with the shoulder at the base or upper end of the lugs 2"; said shoulder being represented by the four triangles in Fig. 6, by the two shoulders in Fig. 1, and by the two shoulders in Fig. 5.

If any expense attaches charge my account for the same.

Very respectfully,

JAMES R. TOWNSEND,

Atty. for Wilson.

JRT-J.

[Endorsed]: Townsend, J. R. U. S. Patent Office, Number 81,548. Received Apr. 16, 1906, Chief Clerk. Apr. 16, 1906. Corrected and forwarded 4/30/06. No chg. Forward to mail room for Div. 38. Mail Room May 1, 1906. Transfer to Div. 38 U. S. Patent Office, May 1, 1906, Division 38. [853]

Div. 38.
Address
"The Commissioner of Patents,
Washington, D. C.,"
and not any official by name.

Paper No.
All *communications* this application
should give the serial number, date of
filing, title of invention, and name of
inventor.

DEPARTMENT OF THE INTERIOR.

UNITED STATES PATENT OFFICE.

WASHINGTON, D. C., May 4, 1906.

MAILED

" " "

Elihu C. Wilson,

Care James R. Townsend,

Bradbury Bldg., Los Angeles, Cal.

Please find below a communication from the

your
EXAMINER in charge of the application of for
“Underreamer,” filed November 28, 1905, Serial No.
289,380.

F. I. ALLEN,
THOMAS EWING,
Commissioner of Patents.

In response to the communication filed April 16,
1906:

In line 3 of the amendment to page 3, line 4, “4”
should be 4².

Claims 2 and 3 are objected to on account of the
reference to the cutters. The introductory phrase of
both claims sets forth that the combination is for an
underreamer body, and as such the cutters form no
part of said body.

It is suggested that in claim 2, line 2, “its ex-
panded” be changed to *the*.

Claim 3, line 3, “the cutters having straight shanks
fitting said ways” should be canceled.

Claim 10 is rejected on Double, 748,054, of record.

The Examiner is unable to see wherein claims 16 and
17 distinguish from Double, 748, 054, of record, and
said claims are accordingly rejected. [854]

Claims 1, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15 and 18, are
allowed.

A. P. SHAW,
Ex.

MEP. [855]

U. S. Patent Office,
May 12, 1906.
Division 38.

289,380 Paper No. 10.
Amdt. E.

IN THE UNITED STATES PATENT OFFICE.

Elihu C. Wilson

Underreamer,	Div. 38,
Filed Nov. 28, 1905,	Room 378,
Ser. No. 289,380.	Paper #10.

Washington, D. C., May 12, 1906.

Hon. Commissioner of Patents,

Sir: Office letter of May 4, 1906, has been considered.

It is noted that the leader from the character 4³ in Fig 9 of the drawings is too long. Please remove the end thereof so that the leader will terminate at the right of a vertical drawn from the right edge of the shank 4'.

Please add the character 4³ to the left of Fig. 9 and connect the same by a leader to indicate on the left of the view the bearing corresponding to the one indicated by the character 4³ at the right of the view.

In Fig. 4 apply the character 4³ in at least two places above and below the view of connect said character by a leader to indicate the bearings at the edges of the cutters 4.

Apply the character 4 to indicate the cutter at the left of Fig. 4.

In the specification:

Page 1, line 11, before the period insert:

—and to leave a maximum open space between the
E' cutters to receive the loose material or sludge,

at the bottom [856] of the well or other opening during the operation of drilling.

Claim 2, line 2 change "its expanded" to—the.

Claim 3, line 3, cancel "the cutters having straight shanks fitting said ways."

Rewrite claim 10 to read as follows:

—10. An underreamer body terminating in prongs
E² having projecting lugs at their lower ends to hold the cutters apart.

Add the following claims:

—19. An underreamer comprising a body terminating in two prongs, and cutters each having
E³ two shoulders and a bearing face on the inner side of each of the two shoulders to engage said prongs.—

20. An underreamer comprising a body terminating in prongs the inner face of which are provided with straight parallel ways, and cutters having straight shanks fitting said ways, the ends of said prongs terminating in lugs below said ways to spread and hold the cutters apart.

It is believed that in view of the application of the additional characters to Figs. 9 and 4, the Examiner will be able to pass claims 16 and 17. The Double Cutter has its bearing face entirely across the cutter instead of on the inner side of the shoulders at the sides of the shank as specified in these claims.

It is believed that in view of the application of the condition for issue.

The final fee has been paid. Please issue the patent at once.

Very respectfully,

JAMES R. TOWNSEND,

Atty. for Wilson. [857]

IN THE UNITED STATES PATENT OFFICE.

Div. 48.
Room 273.
Paper 10.

Elihu C. Wilson.
Under-regmer,
Filed Nov. 23, 1905.
Ser. No. 289,330.

Washington, D.C. May 12 1906.

Hon. Commissioner of Patents,

Sir:-

Please amend Fig. 9 of the
drawings as indicated by red lines in the accompanying
sketch, viz:

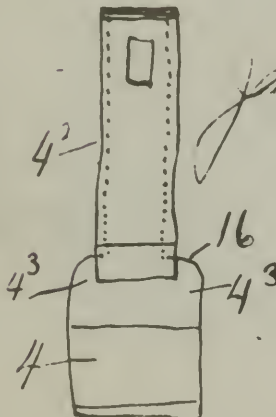
In Fig. 9, add two horizontal lines; one connect-
ing the lower ends of the edge lines of the shank, and the
other connecting said edged lines to indicate the angle in
the face of the shank as shown in Fig. 7.

You will please prepare and file in the case photo
copies of the drawings. (full size).

Charge my account for the service.

Fig. 9.

Very respectfully,



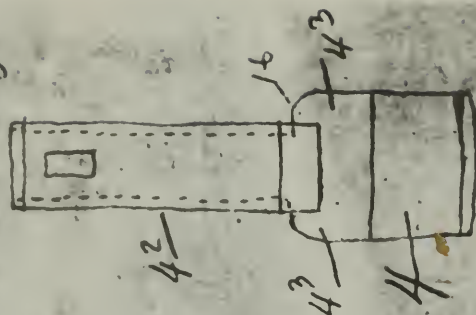
James K. Townsend
Atty. for Wilson.

OK
M & P



289,380

Paper No. 11

And the
Fig. 9

U. S. Patent Off.

MAY 13 1906

Fig. 1.

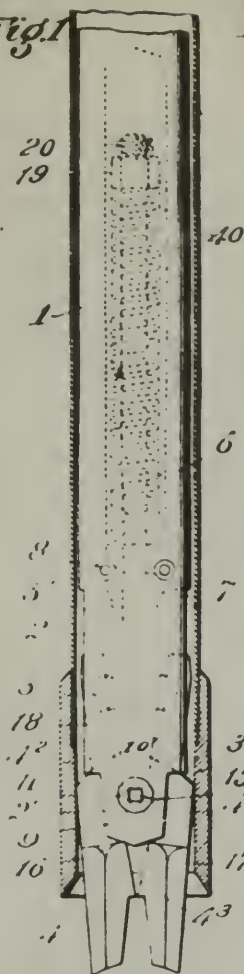


Fig. 3.

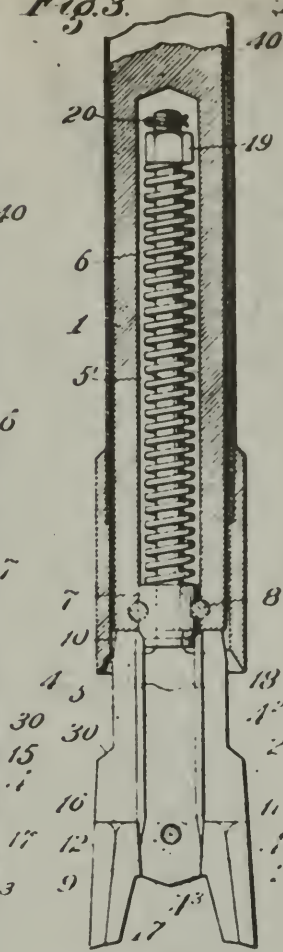


Fig. 5.

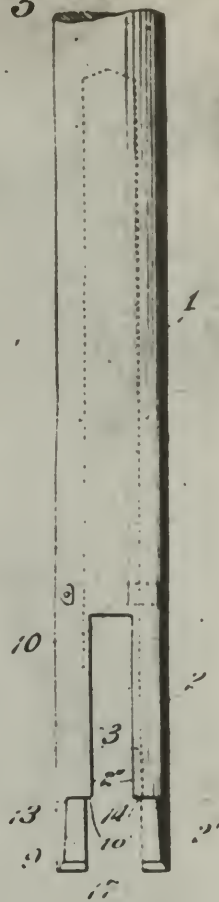


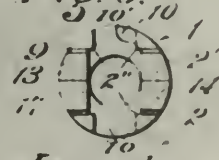
Fig. 2.



Fig. 4.



Fig. 6.



Inventor:

Elihu C. Wilson

By James R. Townsend
his atty

Witnesses:

C. C. K. H.

G. J. Williams

Fig. 7.

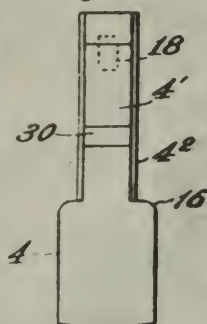


Fig. 8.

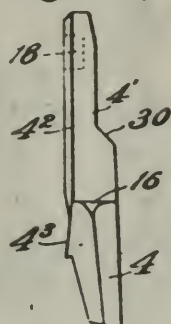


Fig. 9.

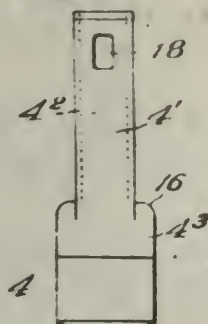


Fig. 10.

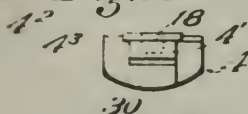


Fig. 11.

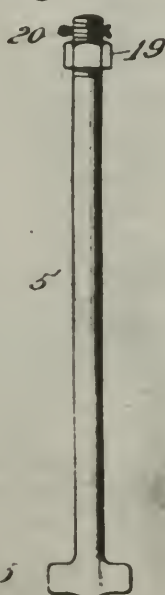


Fig. 12.



Fig. 13.

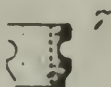
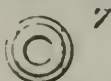


Fig. 14.



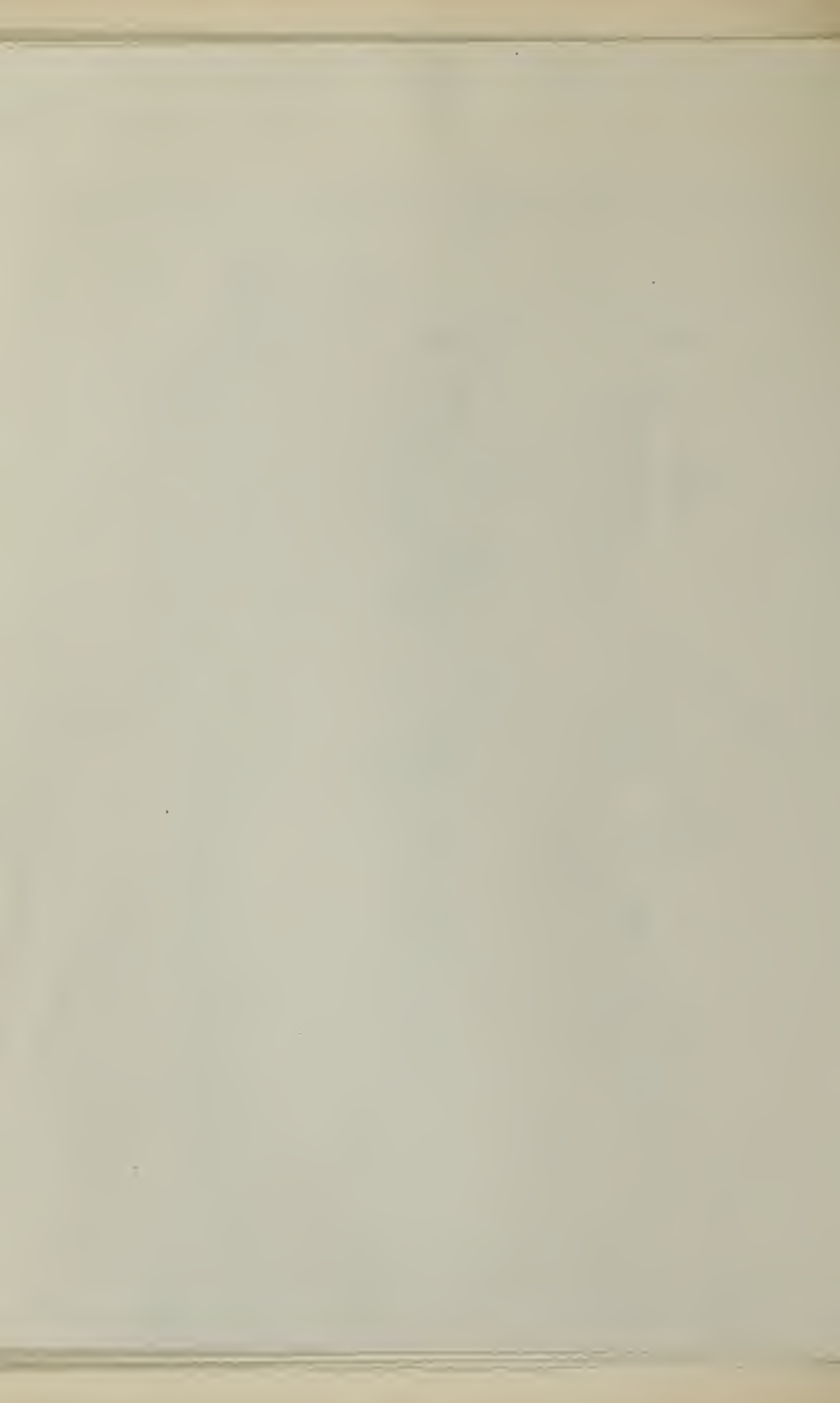
Witnesses:

C. H. H.
69 William

Inventor,

Elihu C. Wilson.

by James R. Townsend
his atty



Div. No. 38.

Address only

"The Commissioner of Patents,
Washington, D. C.,"
and not any official by name.

Paper No. 12

All communications ~~_____~~ing this ap-
plication should give the serial num-
ber, date of filing, title of invention,
and name of inventor.

DEPARTMENT OF THE INTERIOR.

UNITED STATES PATENT OFFICE,

WASHINGTON, D. C., June, 7, 1906.

MAILED

" " "

Elihu C. Wilson,

Care J. R. Townsend,

Bradbury Bldg., Los Angeles, Cal.

Please find below a communication from the
your

EXAMINER in charge of ~~the~~ application ~~of~~ for
"Underreamer," filed November 28, 1906. Serial
No. 289,380.

F. I. ALLEN.

THOMAS EWING,

Commissioner of Patents.

In response to the communication filed May 12,
1906:

Claims 1, 2, 10, 11, 12, 14, 15, 16, 17, 18, and 19,
are rejected upon—

Cummings—819,042, May 1, 1906, Artesian & Oil
Wells, Reamers.

The remaining claims are allowed.

A. P. SHAW,

Ex.

M.E.P. [862].

MAIL ROOM.

289,380 Paper No. 13

Jun. 18, 1906.

Letter, Affidavit and Print.

U. S. PATENT OFFICE.

IN THE UNITED STATES PATENT OFFICE.

MAILED.

To Patent Office.

Jun. 13, 1906.

James R. Townsend.

Elihu C. Wilson,

Underreamer,

Division 38

Filed Nov. 28, 1905,

Room No. 378

Ser. No. 289,380.

Paper No. 11

Los Angeles, Cal., June 11, 1906.

Hon. Commissioner of Patents,

Sir: I herewith hand you affidavit of above mentioned applicant, under Rule 75, of facts showing the completion of the claimed invention in the United States prior to the filing date of the patent of A. Cummings, which issued May 1, 1906, and contains no claims to the subject matter contained in this application.

This is done for the purpose of avoiding reference to said patent.

The final fee has been transmitted and I request that the patent be issued at the earliest possible date.

Very respectfully,

JAMES R. TOWNSEND,

Atty. for Wilson.

Enclosures:

T-A.

MAIL ROOM.

Jun. 18, 1906.

U. S. PATENT OFFICE.

Elihu C. Wilson,

Underreamer,

Filed Nov. 28, 1905,

Ser. No. 289,380.

MAILED

To Patent Office

Jun. 13, 1906.

James R. Townsend.

IN THE UNITED STATES PATENT OFFICE.

State of California,

County of Kern,—ss.

Elihu C. Wilson, first being duly sworn, [863], deposes and says, that he is the applicant who filed an application for patent for UNDERREAMER, in the United States Patent Office, filed Nov. 28, 1905, Serial No. 289,380.

That on or about the months of January or February, 1904, he made the drawing of the invention set forth and claimed in said application for patent and that a blue-print copy of the said drawing is hereto attached and marked "EXHIBIT A, E. C. Wilson."

That the said drawing was made in the State of California, and that it was exhibited to the foreman and other employees of the Baker Iron Works of Los Angeles, California, and as soon as the drawing was completed, namely, about the months of January or February, 1904, that he caused an underreamer to be made in accordance with said drawing, and that said underreamer was completed by the Baker Iron Works some time prior to the 29th day of March, 1904.

Affiant further makes oath, that he does not know and does not believe that the invention has been in public use or on sale, or printed or described in any printed publication, in this or any foreign country for more than two years prior to his application, and that he never abandoned the invention.

E. C. WILSON.

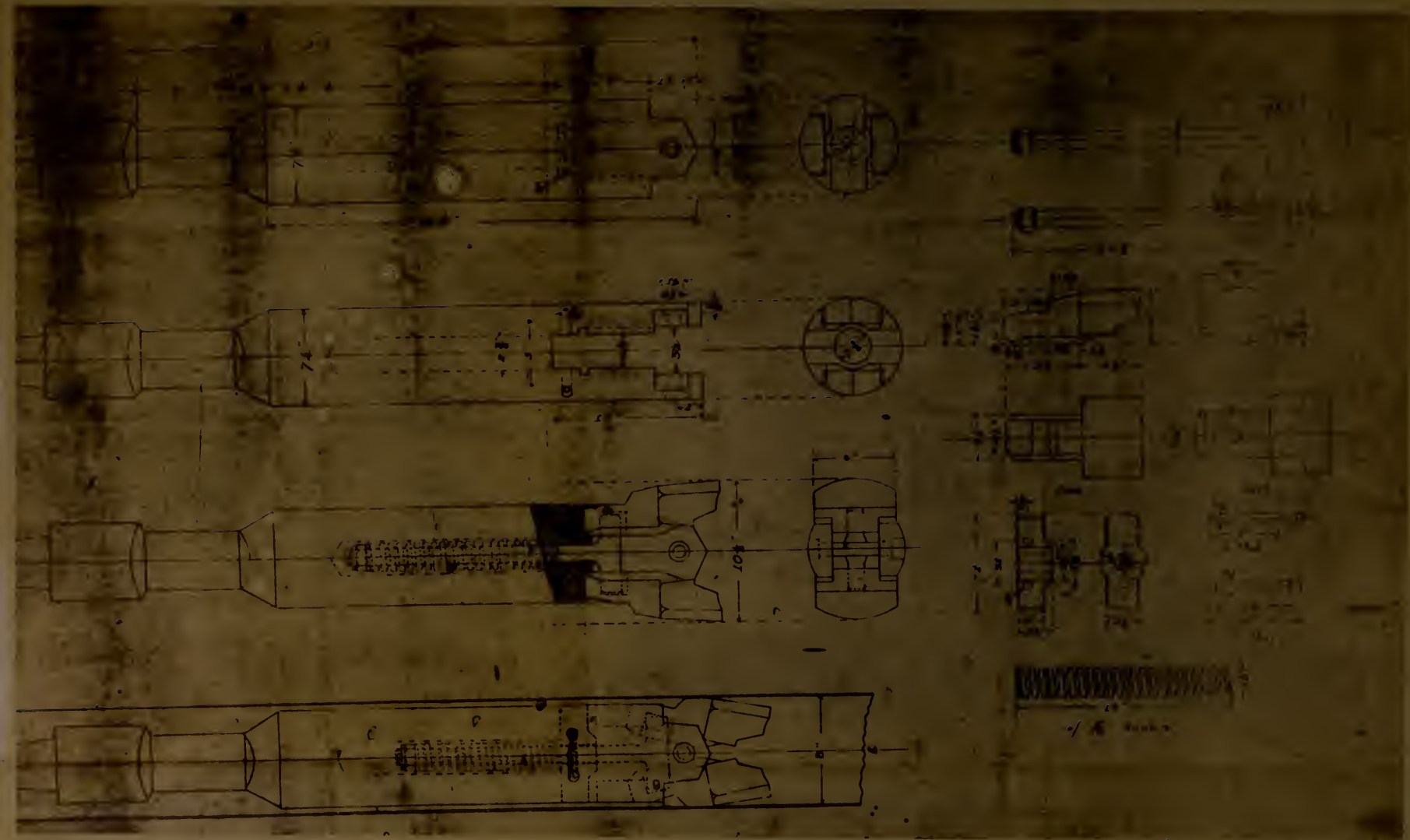
Sworn to and subscribed to before me, this 12th day of June, 1906, at Bakersfield, in the County of Kern, State of California.

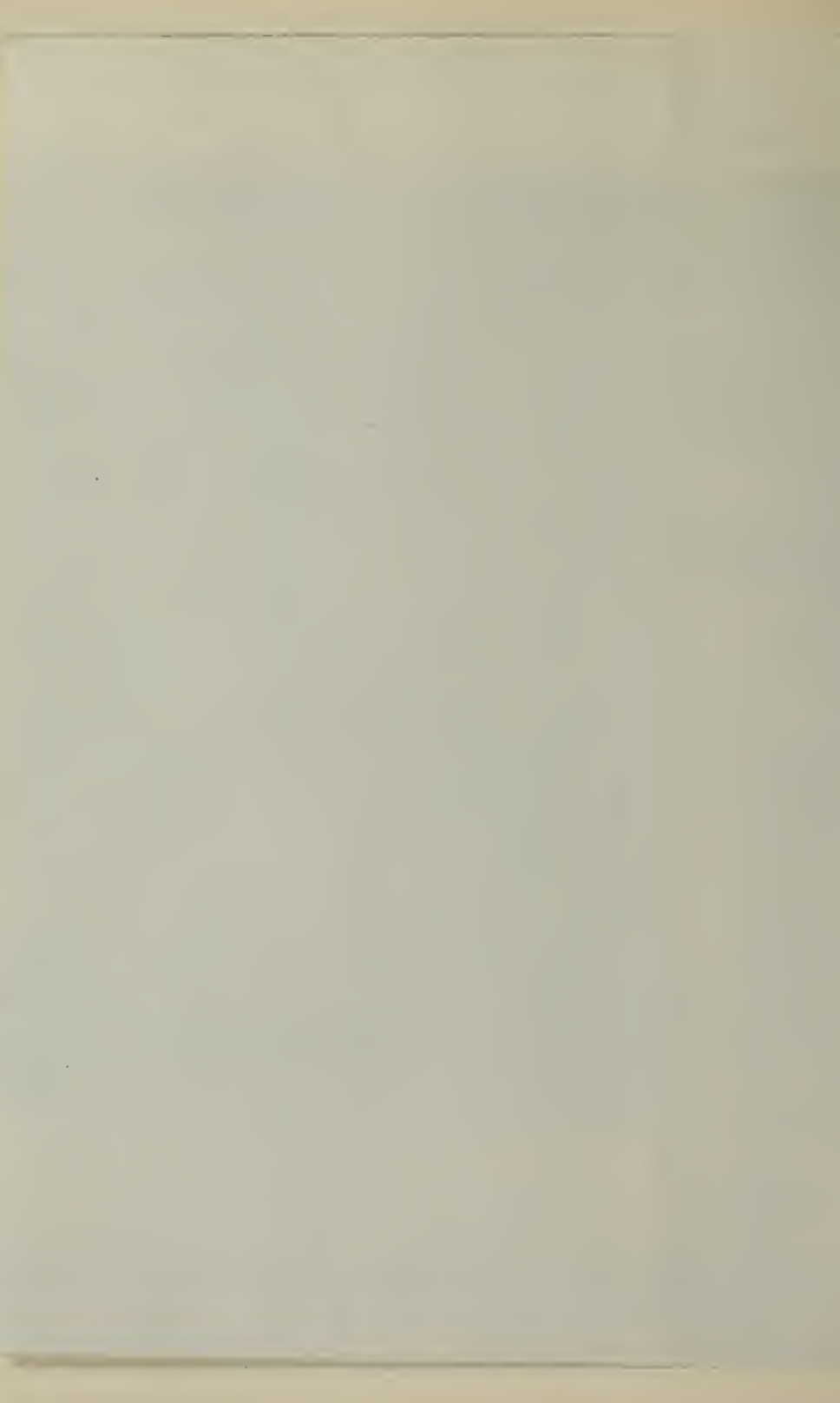
[Seal]

H. I. TUPMAN,
Notary Public in and for the County of Kern, State
of California.

My commissioner expires Aug. 18, 1908.

T-A. [864]





CERTIFICATE OF DEPOSIT.

\$20 RECEIVED

MAILED

JUN. 18, 1906. S.

JUN. 13, 1906.

CHIEF CLERK.

James R. Townsend.

U. S. PATENT OFFICE.

MEMORANDUM

of

FEE PAID AT UNITED STATES PATENT
OFFICE.

(Be careful to give correct Serial No.)

Serial No.289,380....., 1900.

INVENTOR: Elihu C. Wilson,

Patent to be Issued to: Elihu C. Wilson,

Name of Invention, as Allowed: Underreamer.

Date of Payment: June 13, 1906.

FEE: \$20.00.

Date of Filing: Nov. 28, 1905.

Date of Circular of Allowance:

The Commissioner of Patent will please apply the
accompanying fee as indicated above.

JAMES R. TOWNSEND,

ADAM,

Attorney.

Send Patent To

JAMES R. TOWNSEND,

PATENTS

BRADBURY BLOCK,

LOS ANGELES, CAL. [866]

JMH.

Address only

Serial No. 289,380

“The Commissioner of Patents,
Washington, D. C.”

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,

Washington, D. C., June 18, 1906.

Elihu C. Wilson,

c/o James R. Townsend,

430 Bradbury Bldg.,

Los Angeles, Cali.

Sir:

You are informed that the final fee of TWENTY DOLLARS has been received in your application for Improvement in

Underreamer.

Date of receipt:

Very respectfully,

F. I. ALLEN.

E. B. MOORE,

Commissioner of Patents.

Div. No. 38.

Paper No. 14.

Address only

"The Commissioner of Patents,
Washington, D. C.,"
and not any official by name.

All communications ——— *ing* this
application should give the serial
number, date of filing, title of in-
vention, and name of inventor.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., June 23, 1906.
MAILED " " "

Elihu C. Wilson,

c/o J. R. Townsend,

Bradbury Block, Los Angeles, Cal.

Please find below a communication from the
your

EXAMINER in charge of ~~the~~ application ~~of~~ for
"Underreamer," filed November 28, 1905, Serial
No. 289,380.

F. I. ALLEN.

THOMAS EWING,

Commissioner of Patents. [867]

In response to the communication filed June 18,
1906:

In line 3 of the amendment to line 4, page 3, 4"
should be 4² to agree with the drawing, as required in
Office letter of May 4, 1906.

The claims are allowed.

G. R. IDE,
Actg. Exr.

M. E. P.

U. S. PATENT OFFICE.

JUL. 5, 1906.

Division 38.

MAIL ROOM.

289,380 Paper No. 15.

JUL. 3, 1906.

Amdt. F.

U. S. PATENT OFFICE.

IN THE UNITED STATES PATENT OFFICE.

MAILED

To Patent Office.

JUN. 28, 1906.

James R. Townsend.

Elihu C. Wilson,

Underreamer,

Division 38.

Filed Nov. 28, 1905,

Room No. 378.

Ser. No. 289,380.

Paper No. 15.

Los Angeles, Cal., June 28, 1906.

Hon. Commissioner of Patents,

Sir: In response to Office Letter of June 23, 1906.

Please substitute 4² for "4" in line 3 of amend-
ment to line 4 Page 3.

The final fee has been paid. Please issue the patent as soon as possible.

Very respectfully,

JAMES R. TOWNSEND,

Atty. for Wilson.

[Endorsed]: Docket Clerk Jul. 3, 1906. U. S.
Patent Office. [868]

A. R.

289,380

Issue Division

All communications should be
addressed to

“The Commissioner of Patents,
Washington, D. C.”

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE,
Washington, D. C., July 12, 1906.
190—

Elihu C. Wilson,
c/o J. R. Townsend,
430 Bradbury Bldg.,
Los Angeles, Cal.

Sir:

Your Application for a patent for an Improvement
Under Reamers
filed Nov. 28, 1905, 190—, has been examined and
allowed.

The final fee, TWENTY DOLLARS, having been
received, the Letters Patent will be forwarded in
due order of business.

Additional copies of Specifications and Drawings
will be charged for at the following rates: Single
copies, uncertified, 5 cents each. The money should
accompany the order.

Very respectfully,

F. I. ALLEN,
Commissioner of Patents. [869]

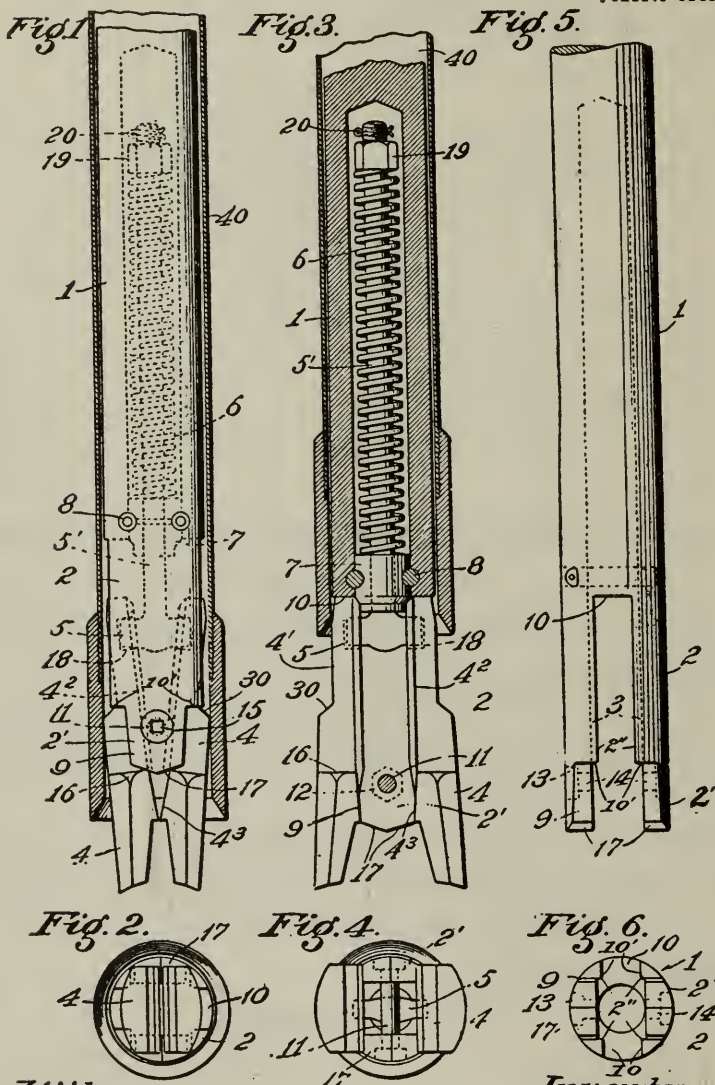
No. 827,595.

PATENTED JULY 31, 1906.

E. C. WILSON.
UNDERREAMER.

APPLICATION FILED NOV 28, 1905.

2 SHEETS—SHEET



Witnesses:

C. C. Hollis
C. J. Williams

Inventor,

Elihu C. Wilson
by James R. Townsend
his atty

No. 827,595.

PATENTED JULY 31, 1906.

E. C. WILSON.
UNDERREAMER.

APPLICATION FILED NOV. 28, 1905.

2 SHEETS—SHEET 2.

Fig. 7.

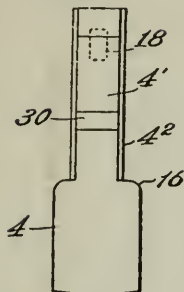


Fig. 8.

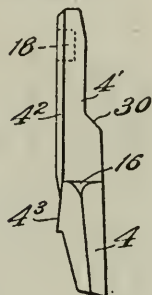


Fig. 9.

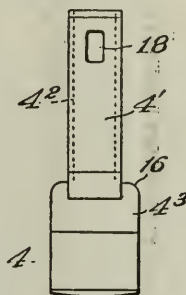


Fig. 10.

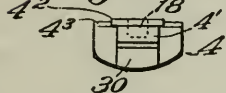


Fig. 11.

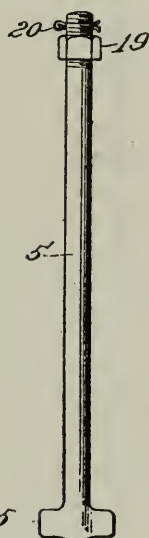


Fig. 12.



Fig. 13.



Fig. 14.



Witnesses:

C. C. Holly
G. J. Williams

Inventor:

Elihu C. Wilson.

G. James P. Townsend
his Atty.

UNITED STATES PATENT OFFICE.

ELIHU C. WILSON, OF BAKERSFIELD, CALIFORNIA.

UNDERREAMER.

No. 827,595.

Specification of Letters Patent.

Patented July 31, 1915.

Application filed November 28, 1905. Serial No. 289,380.

To all whom it may concern:

Be it known that I, ELIHU C. WILSON, a citizen of the United States, residing at Bakersfield, in the county of Kern and State of California, have invented a new and useful Underreamer, of which the following is a specification.

Objects of this invention are to provide an underreamer of superior strength and of superior width and expansion of cutters so as to enable reaming as great a portion of the circumference of the hole as possible at each stroke, to insure greater safety against losing the cutters from the body while reaming, to avoid the necessity of a middle joint in the mandrel or reamer body, and to leave a maximum open space between the cutters to receive the loose material or sludge at the bottom of the well or other opening during the operation of drilling.

By this invention it is possible to increase the strength of the cross or T which suspends the cutters.

In this invention a cross or T formed of a single forging is provided for suspending the cutters.

Another decided advantage is simplicity and convenience of attaching and removing the cutters and suspending devices from the reamer-body.

Another advantage is facility of collapsing the cutters. I so construct the mouth of the underreamer as to dispense with stock between the collapsed cutters, thus enabling the cutters to close together. This feature makes extreme expansion possible and makes the use of maximum amount of stock in shanks of cutters possible, thus insuring maximum strength of cutters.

The accompanying drawings illustrate the invention.

Figure 1 is a view of the underreamer in a casing just before it has passed through the shoe of the casing, the parts being collapsed. Fig. 2 is a view looking at the bottom of Fig. 1. Fig. 3 is a view of this newly-invented underreamer in a well, the same having just passed through the casing-shoe and expanded for reaming the hole below. Portions are shown in mid-section. Fig. 4 is a view looking at the bottom of Fig. 3. Fig. 5 is a view of the reamer-body at right angles to Figs. 1 and 2. Fig. 6 is a view looking at the bottom of Fig. 5. Fig. 7 is a front view of a cutter detached. Fig. 8 is an edge view of a cutter at right angles to Fig. 7. Fig. 9 is a

view of the inside or back of the cutter. Fig. 10 is a view looking down on the top of the cutter. Fig. 11 is a view of the cross. Fig. 12 is a view of the cross at right angles to Fig. 11. Fig. 13 is a side view of the spring seat-block detached. Fig. 14 is a bottom view of the same.

1 designates a hollow body of an underreamer terminating in prongs 2, forming a fork, said prongs having shoulders 2' on their inner faces to form ways 3 for cutters. Said prongs are provided with and terminate in downwardly-projecting lugs 2' to spread the cutters apart.

4 designates the cutters, which are interchangeable; 4', the cutter-shank; 4², bearing-shoulders of the cutters to engage inside the ways 3; 4³, expansion bearing-faces of the cutters on the sides of said cutters.

The inner faces of the prongs 2 are parallel, and the sides or shoulders 2', which form the ways 3, are also parallel. The cutter-shank 4' and its bearing-shoulders 4² are straight—that is to say, the sides or edges thereof are parallel and fit the ways 3.

5 is a cross, 5' the stem of the cross, and 6 the spring which actuates the cross. The parts 5 5' constitute spring-actuated means for actuating the cutters to expand the same.

7 is a block forming a seat for the spring 6. One or more dowel-pins 8 may be provided as means for holding the block or spring-seat 7 in place.

9 designates the spreading bearings for holding the cutters 4 apart, and 10 the down-thrust bearings for the cutters. The down-thrust bearings 10' are in the nature of shoulders formed by the edges of the forks at the base of the lugs 2'. The prongs 2 of the body are of substantially one thickness throughout, excepting that they are reduced at their lower ends to form lugs for spreading the cutters 4 apart. The edges of the lugs 2' for the spreading bearings 9 and the prongs terminate abruptly in the shoulders 10' at the base of the lugs 2'. This construction affords the necessary operative structure with maximum strength for minimum weight of body.

11 is a detachable cross-piece in the form of a bolt secured by a nut 12. 13 is an angular socket in the outer face of one of the forks around the bolt-hole 14 in said fork. The nut 12 is conformed to the angular socket, and the bolt 11 is provided with an angular socket 15 in its head to receive a wrench (not shown) for screwing the bolt into the nut.

827,595

The expansion bearing-faces 43 terminate at their upper ends in rounded corners or bearings 16 to ride more readily over the beveled end faces 17 of the downwardly-projecting lugs 2' to engage said bearings for expanding the cutters.

18 designates recesses in the inner faces of the cutters for engaging the ends of the cross 5.

19 and 20 indicate the usual tension-nut for the spring 6 and the cotter-pin for securing the same.

To assemble the underreamer, the block 7 will first be placed on the stem 5' of the cross 5, and the spring 6 is then adjusted and secured in place by the nut 19 and cotter-pin 20. Then the cutters are placed on the ends, respectively, of the cross 5, which seat in the recesses 18 therefor. Then the parts thus assembled are inserted into the hollow mandrel and brought into the position shown in Fig. 3, whereupon the dowel-pins 8 are inserted and the cross-piece formed of the bolt 11 is then inserted. The nut 12 is placed in its angular socket 13, and the bolt or cross-piece 11 is then screwed home. The underreamer is then in condition for operation.

To use the underreamer, the cutters will be drawn down below the downwardly-projecting lugs 2', thus collapsing the same into the position shown in Fig. 1, whereupon the underreamer will be inserted into the pipe or casing in the usual manner and allowed to descend. When it has passed through the shoe, as shown in Fig. 3, the spring operates in the usual manner to draw the cross 5 up, thus bringing the cutters into the expanded position shown in Fig. 3. The rounded shoulders 16 ride readily over the beveled faces 17, and the upper ends of the cutters seat against the downthrust bearings 10, and the bearing-shoulders 42 of the cutters engage the ways 3 of the fork prongs or members 2, thereby being solidly held during the operation of underreaming. The spreading bearings 9 of the lugs 2' engage the expansion bearing-faces 43 of the cutters at the same time, so that the tool is practically a unit during the operation of underreaming.

30 designates the usual shoulders on the cutters for drawing the same in when the tool is removed through the pipe or casing 40.

It is advisable that the lower ends of the cutters should not form downthrust bearings for the cutters, as there would otherwise be a tendency of crystallization of said cutters, which is avoided by making the downthrust bearings at 10 only.

The cross-piece 11 serves as a brace for the prongs of the fork and prevents accidental removal of the cutters and T or cross 5.

It is to be noted that by the construction shown the cutters are quickly expanded at the initial upward movement of the same

after escaping the shoe of the casing 40, and that immediately thereafter the cutters are solidly held in the straight and parallel ways 3, and that when the cutters are fully drawn up they seat on the downthrust bearings 10 and the spreading bearings 9, while the shanks are rigidly held throughout their length. Said spreading bearings are on the lugs 2', which constitute wedges for wedging the cutters apart, and said bearings are at the sides of the lower ends of the body, thus engaging the outer edges of the cutters to hold the cutters apart and leaving an open space between the middle portions of the cutters for a greater distance upward from the lower ends of the cutters than would be the case were the cutters held apart by any intermediate portion between the lugs.

I term the cutters "shouldered cutters," for the reason that the rounded corners 16, which extend away from the shank at right angles thereto, are in the nature of shoulders, the inner faces 43 of which engage the spreading faces 9 of the side lugs 2' to brace the cutters and hold them apart.

What I claim is—

1. An underreamer-body terminating in prongs having projecting lugs at their lower ends with spreading bearings 9 for holding the cutters apart.

2. An underreamer-body terminating in prongs and provided with upper and lower bearings for the cutters, said prongs having projecting lugs, the edges of which form lower bearings for holding the cutters apart, and the ends of said lugs having beveled end faces.

3. An underreamer-body terminating in prongs the inner faces of which are provided with straight parallel ways, the ends of said prongs terminating in lugs below said ways to spread and hold the cutters apart.

4. An underreamer-body terminating in prongs forming a fork, said prongs having shoulders on their inner faces to form ways for the cutters.

5. A hollow underreamer-body terminating in prongs forming a fork having shoulders on the inner faces to form ways for the cutters, cutters in said ways, a cross in said hollow body for operating said cutters, a spring for operating the cross, a block in the body to form a seat for said spring, and one or more dowel-pins securing the block in place.

6. A hollow underreamer-body, cutters, a cross inside the hollow body for operating said cutters, a spring for operating said cross, a block in said body forming a seat for said spring, and one or more dowel-pins for holding the block in place, said block and pins being located entirely above the head of the cross.

7. A hollow underreamer-body terminating in prongs forming a fork and provided with ways and downthrust bearings for cut-

827,595

- ters, cutters in said ways engaging said bearings, a cross for operating said cutters, a spring for actuating said cross, a block forming a guide for the stem of the cross and a seat for the cross-actuating spring, its lower end terminating above the head of the cross and projecting below the downthrust bearings to hold the upper ends of the cutters apart, and means for holding the block in the reamer-body.
8. A hollow underreamer-body terminating in prongs forming a fork, said prongs having shoulders on their inner faces to form ways, cutters in said ways, means for operating the cutters, and a detachable cross-piece connecting the ends of the fork.
9. An underreamer-body terminating in prongs forming a fork and provided with shoulders on the inner faces of the prongs which form cutter-ways and terminate in downwardly-projecting lugs, and cutters mounted between the prongs of said fork and having shoulders inside the fork and faces to bear on the projecting lugs.
10. An underreamer-body terminating in prongs having projecting lugs at their lower ends to hold the cutters apart.
11. An underreamer-body terminating in prongs forming a fork having beveled faces at the ends of its prongs, cutters having shoulders to ride over said beveled faces, and means for suspending said cutters in said body.
12. An underreamer-body terminating in prongs forming a fork, the ends of said prongs being provided with lugs to spread the cutters apart.
13. An under-reamer-body terminating in prongs forming a fork, said prongs having shoulders on the inner faces to form ways for the cutters, and said prongs terminating in lugs to act, as spreaders for the cutters.
14. A hollow underreamer-body terminating in prongs forming a fork, said prongs terminating in lugs for spreading the cutters, said lugs having beveled ends to engage bearings on cutters to expand cutters.
15. An underreamer-body terminating in prongs forming a fork, said prongs terminating in lugs or projections, said lugs having beveled faces or bearings to expand the cutters, and also faces or bearings for the cutters to rest on after they have expanded to a normal position for reaming.
16. An underreamer-cutter having two shoulders and a bearing-face on the inner side of each of the two shoulders of the cutter.
17. An underreamer-cutter having a shank and a shoulder on either side of the shank of the cutter, each of said shoulders projecting at right angles to the shank of the cutter and having a bearing-face on its inner side.
18. An underreamer having a body terminating in a fork, and cutters suspended between the prongs of the fork, the ends of said prongs constituting wedges to wedge between the cutters.
19. An underreamer comprising a body terminating in two prongs, and cutters each having two shoulders and a bearing-face on the inner side of each of the two shoulders to engage said prongs.
20. An underreamer comprising a body terminating in prongs the inner faces of which are provided with straight parallel ways, and cutters having straight shanks fitting said ways, the ends of said prongs terminating in lugs below said ways to spread and hold the cutters apart.
- In testimony whereof I have hereunto set my hand at Bakersfield, California, this 20th day of November, 1905.
- ELIHU C. WILSON.
- In presence of—
H. I. TUPMAN,
T. E. KLOPSTEIN.

1905.

CONTENTS:

Print May 31—06.

½. Application papers. OK.

1. Amdt. A. Dec. 26—05.

166. Artesian & Oil Wells

2. Rej. Jan. 9—06.

6. Reamers.

3. Amdt. B. Mar. 12—06.

4. Rej. Mar. 21—06.

5. Amdt. C. Mar. 27—06.

6. Letter April 3—06.

7. Amdt. 4. Apr. 16—06.

8. Amdt. (drg.). Apr. 16—06.

9. Rej. May 4—06.

10. Amdt. E. May 12—06.

11. Amdt. (drg.). May 12—'06.

12. Rej. June 7—06.

13. Letter, Affidavit, Print. June 18—06.

14. Letter. June 23—06.

15. Amdt. F. July 3—06.

U. S. Patent Office.

DEC. 1, 1905.

DIVISION 38.

TITLE:

Improvement in Underreamers.

[Endorsed]: 715-2. U. S. Dist. Court, Southern District of California, Southern Division. Wilson vs. Union Tool Co. In Equity A-4. Complainant's Exhibit Wilson File Wrapper and Contents, Los Angeles, Cal., March 24, 1914. I. Benjamin, Notary Public. [871]

**Defendant's Exhibit—File Wrapper and Contents in
Re Application of Frederick William Jones.**

2-390.

UNITED STATES OF AMERICA.
DEPARTMENT OF THE INTERIOR.
UNITED STATES PATENT OFFICE.

To all to whom these presents shall come, Greeting:

THIS IS TO CERTIFY that the annexed is a true copy from the Records of this Office of the File Wrapper, Contents and Drawing in the matter of the

Abandoned Application of
Frederick William Jones.

Filed July 14, 1902.

Serial Number 115,608,

for

Improvement in Underreamer for Oil-well purposes.

IN TESTIMONY WHEREOF I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the City of Washington, this 13th day of September, in the year of our Lord one thousand nine hundred and fifteen and of the Independence of the United States of America the one hundred and fortieth.

[Seal]

J. T. NEWTON,

Acting Commissioner of Patents.

[Documentary Stamp.] [872].

2—437

19, NUMBER (SERIES OF 1900).

115,608

1902

DIV. 38

(EX'R'S BOOK) 110-9

PATENT NO.

Abandoned.

Name—Frederick William Jones.

Of Santa Paula,

County of—

State of California.

Invention—Underreamer for Oil-well purposes.

ORIGINAL.

RENEWED.

Division of App. No. PARTS OF APPLICATION FILED.	Petition	Dec. 23, 1901	, 190
	Affidavit	July 14, 1901	, 190
	Specification	“ “, 1902	, 190
	Drawing	“ “, 1902	, 190
	Model	“ “, 190	, 190
	First Fee Cash, \$15.	Dec. 23, 1901	, 190
	“ “ Cert.	, 19	, 190
	Appl. filed complete	July 14, 1902	, 190

Examined, 190

For Commissioner. For Commissioner.

Notice of Allowance, 19, 190

Final Fee Cash, 19, 190

“ “ Cert., 19, 190

Patented, 190

Associate Attorney Attorney

Name— Serail Number

Patent No.— Date of Patent. [873]

115,608 Paper No. 1½

Amount Received \$15. E. O.

Chief Clerk J.

PETITION.

To the Commissioner of Patents:

citizen

Your Petitioner, Frederick William Jones, ~~subject~~ of the United States of America, and resident of Santa Paula, in the county of *Ventua*, and State of
 is
 California, whose postoffice address ~~are~~ Santa Paula, Calif, pray that Letters Patent may be granted to the above named for the improvement in An Under-reamer for Oil-Well purposes, as set forth in the annexed specification.

And I hereby appoint Frederick William Jones,
 attorney
 of Santa Paula, State of California, /with full power
 to prosecute this application,
 of substitution and revocation, / to make alterations
 and amendments therein, to receive the patent, and
 to transact all business in the Patent Office connected
 therewith.

Signed at Santa Paula, in the County of Ventura,
 and State of California, this 14 day of Dec. 1901.

FREDERICK WILLIAMS JONES.

OATH.

Frederick William Jones, the above-named petitioner, being sworn (or affirmed) deposes and says *thet* he is a citizen of the United States of America and resident of Santa Paula, Ventura County, California, that he verily believe himself to be the original, first, and only inventor of the improvement in an Un-

derreamer for Oil Well purposes as described and claimed in the annexed specification; that he does not know and does not believe that the same was [874] ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof or more than two years prior to this application or in public use or on sale in the United States for more than two years prior to this application; and that no application for patent on said improvement has been filed by him or any of his representatives or assigns in any country foreign to the United States, except as follows:

FREDERICK WILLIAM JONES.

Sworn to and subscribed before me this 16th day of Dec. 1901.

[Seal]

J. B. TITUS,

Notary Public in and for the County of Ventura,
State of California.

[Endorsed]: Mail Room, Dec. 28, 1901. U. S.
Patent Office.

OATH.

State of California,
County of Ventura,—ss.

Frederick William Jones, the above-named petitioner, being sworn (or affirmed) deposes and says that he is a citizen of the United States of America and resident of Santa Paula, in the County of Ventura, in the State of California that he verily believes himself to be the original, first and only inventor of the improvement in An Underreamer for Oil

Well purposes described and claimed in the annexed specification; that he does not know and does not believe that the same was ever known or used before his invention or discovery thereof, or patented or described in any printed publication in any country before his invention or discovery thereof, or more than two years prior to this application, or in public use or on sale in the United States for more than two years prior to this application; and that no application [875] for patent on said improvement has been filed by himself or any representatives or assigns in any country foreign to the United States, except as follows:

FREDERICK WILLIAM JONES.

Sworn to and subscribed before me this seventh day of July, 1902.

[Seal] ARTHUR H. BLANCHARD,
Notary Public in and for the County of Ventura,
State of California.

To whom it may concern:

Be it known that I, Frederick William Jones, a citizen of the United States, residing at Santa Paula, in the county of Ventura, in the State of California.

Having invented a new and useful Underreamer or Expanding bit, of which the following is a specification.

My invention relates to improvements in an Underreamer with a round Mandrel with a taper pin at its upper end, to screw onto the well tools, a flat place for wrenches to screw the same together. The said Mandrel is reduced at its lower end with two seats,

one on each side with a slot extending the length of the seat and through the center of the Mandrel.

A flat tongue extending across the point of mandrel and below the seat.

The said reduced part is threaded at its upper part to receive a collar, the said collar is screwed on over the seats. Two cutters made to fit in the seats and on the flat tongue and extend below the point of mandrel. Held in place with a plunger with an arrow-shaped head under two lugs on the under side and at the upper end of cutters. The said plunger is held in place with a spring and a nut on its upper end. [876]

I attain these objects by the *Machanism* illustrated in the accompanying drawing.

Fig. 1 is a sectional view of the entire machine, showing the cutters as it appears in a working position.

Fig. 2 is a sectional view showing the cutters closed while passing down the well casing.

Fig. 3 shows the general construction of the mandrel and cutters.

Fig. 4 is an end view with one of the cutters removed.

Fig. 5 shows the construction of the cutters.

Similar letters refer to similar parts through out the several views.

In Fig. 1 A is the main mandrel reduced at its lower end and threaded at E to receive collar B with a corresponding thread. C are the cutters which are made with a shank L into two seats P as shown in Fig. 4, in mandrel A and surrounded on the outside by collar B and shouldering against the end of the

seats P and against the lower edge of collar B.

Cutters C are provided with a lug D at its upper end and on the inner side; said lug is made to fit into slot F as shown in Fig. 4.

Cutters C have a recess on the under-side as shown at G and in Fig. 5 so that the arrow shaped

Per. A.

bearing

head I can get a wider ~~held~~ on cutter C, so that
down

when the cutters are drawn / as shown in Fig. 2, D can not unhook from I.

Cutters C is made at its lower end V shaped as shown at J, so that if mud or rock get in between when they are spread out in a working position, that when they come together the V shaped will have a tendency to squeeze the mud or rock or anything that may get in between them out on each side; where if they were flat the substance would stay in between them and keep them from coming together, so they would not come out of the well.

Per. A.

Cutters C are made with a lug on each side as shown in Fig. 3 at K [877]

and 5 at K, so as to give them a larger bearing ^{against collar Band} on tongue M there-
fore giving the cutters more wearing surface.

55 Tongue M extends across the point of mandrel ^A and below collar B.
Insert A Plunger H is provided with a nut N on the upper end which has a
collar; so if cutters should strike something that would draw them
down to far, the collar on nut N would come down ^{the tapering threaded} against the end of
pin O as shown in Fig. 2; so that the cutters can not come down
60 below collar B and unhook from I and get lost in the well.

Now having described my invention, what I claim as new and desire
to secure by Letters Patent, is:-

Claim I.

Sub B 65 The combination in an under-reamer with a round mandrel reduced
at its lower end, the said reduced part is threaded at its upper
end to receive a collar to screw on the same substantially as set
forth.

Claim II.

70 The combination in an under-reamer with a round mandrel reduced
at its lower end. The said reduced part is threaded at its upper
end to receive a collar. The said reduced part is also provided
with two seats extending part of the way up the said reduced part.
A slot extending the length of the seat and through the center
of mandrel. Substantially as set forth.

Claim III.

75 The combination in an under-reamer with a round mandrel reduced
at its lower end with a collar to screw on the reduced part, a
flat tongue extending across the reduced part and below the said
80 collar. Substantially as set forth.

Claim IV.

85 The combination in an under-reamer with a round mandrel reduced
at its lower end with a collar to screw on the reduced part. With
a flat tongue extending across the reduced part and below the col-
lar. Two cutters with a lug on each side to engage with the col-

lar b and tongue m. Substantially as set forth.

Claim V.

90 The combination in an under-reamer with a round mandrel reduced at its lower end, with a collar screwed on the lower end. With two cutters, the part of said cutters that extend below the flat tongue on mandrel is V shaped on the in side. Substantially as set forth.

Claim VI.

95 The combination in an under-reamer with a round mandrel reduced at its lower end with a collar to screw on the reduced part. With two cutters provided at the upper end and on the under side with a lug to come in contact with a plunger with an arrow shaped head. Substantially as set forth.

Claim VII.

100 The combination in an under-reamer with a round mandrel reduced at its lower end with a collar to screw on the reduced part. With two cutters provided at the upper end and on the under side with a lug. A recess cut into said cutter at the base of said lug as shown at G. Substantially as set forth.

105 Claim VIII.

110 The combination in an under-reamer with a round mandrel reduced at its lower end with a collar screwed on the same. With two cutters held in place with a lug on the under side and at its upper end by a plunger with an arrow shaped head. The said plunger is provided with a nut at its upper end. The said nut has a collar to engage with pin O. Substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses:

Witnesses:

O. E. Jones

N. A. May

Frederick William Jones

Div. Room 222.

Paper No. 1

Address only

"The Commissioner of Patents,
Washington, D. C.,"
and not any official by name.

L. C.

All communications —ing this ap-
plication should give the serial num-
ber, date of filing, title of invention,
and name of applicant.

DEPARTMENT OF THE INTERIOR.

UNITED STATES PATENT OFFICE,

Washington, October 6, 1902.

Mailed Oct. 6, 1902.

Frederick W. Jones,
Santa Paula,
California.

Please find below a communication from the
EXAMINER in charge of the application of for
"Under-reamer for Oil-Well Purposes," filed July
14, 1902, Serial No. 115,608.

F. I. ALLEN,

~~THOMAS EWING,~~

Commissioner of Patents.

The lettering upon the drawing does not cor-
respond with reference letters in the specification.
They should all be capitals or all small letters, and
should be alike in both places.

The word "holt" in line 43, should be corrected.

The tongue M referred to in line 55, should be
more fully described.

The pin O in line 59, is not shown in the drawing.

Claim 1 does not cover a complete combination.

The claims are all informal. Each should contain
a single sentence and contain the elements of a com-
plete combination. No action on the merits can be
given until the claims are so drawn and the elements
positively included.

As the applicant is apparently not familiar with

drawing claims he is advised to employ a competent attorney, skilled in Patent Office work, to prosecute his case.

A. P. SHAW,

M.E.P.

Ex. [880]

U. S. Patent Office,

Mar 16, 1903.

Amendt. A Paper No. 2.

Division 38.

Mail Room.

Mar. 14, 1903.

U. S. Patent Office.

Santa Paula, Calif., March 8, 1903.

Com. of Patents.

Dear Sir:

Ser. No. 115,608, filed July 14, 1902.

The examiner is in error when he says that Pin O in line 59 and in line 8 is not shown in the drawing. He says the claims are informal and the lettering is not alike. I would like to have all the claims as near alike like they are as possible, as each claim covers what I consider each part of the invention. Now what would the cost be for making a new drawing and rewriting the claims.

Please insert the following in the specifications:

In line 42 holt should (bearing).

In line 49 get should be (together)

In line 52 after Fig. 3 add in (at K.).

In line 55 after mandrel add in (A).

Following line 55 add in

A' (But is a part of mandrel A and gives a larger bearing for cutters.)

At the end of line 58 add in (The tapering threaded).

Resp't

FRED W. JONES. [881]

Div. Room 22.

Address only

"The Commissioner of Patents,
Washington, D. C.,"
and not any official by name.

L. C.

Paper No. 3.

All communications respecting this application should give the serial number, date of filing, title of invention, and name of applicant.

DEPARTMENT OF THE INTERIOR.

UNITED STATES PATENT OFFICE.

Washington, March 30, 1903.

Mailed Mar. 30, 1903.

Frederick W. Jones,
Santa Paula,
California.

Please find below a communication from the EXAMINER in charge of the application of for "Under-reamer for Oil-Well Purposes," filed July 14, 1902, Serial No. 115,608.

F. I. ALLEN,

~~THOMAS EWING,~~

Commissioner of Patents.

In response to the communication filed March 14, 1903:

The Office will change the lettering upon applicant's drawing to correspond with that used in the specification, upon the request of the applicant and the receipt of fifty cents. This request should be made in a separate communication. The Office, however, cannot redraw applicant's claims. As stated in the last Office Letter applicant is advised to secure the services of a competent Patent Attorney, to as-

sist him in redrawing his claims. A roster of registered attorneys entitled to practice before the Patent Office may be obtained upon application to the chief clerk for ten cents in currency.

A. P. SHAW,

Ex. [882]

Mail Room.

115,608 Paper No. 4

Nov. 30, 1903.

U. S. Patent Office.

Amdt B.

Santa Paula, Calif., Nov. 23, 1903.

Com. of Patents, Dear Sir:

Underreamer for Oil Well purposes, filed July 14, 1902, Ser. No. 115,608.

In answering to your communication of Oct. 6 and March 30, 1903, the Examiner in charge stated in his letters that the lettering upon the drawing does not correspond with the specifications.

I have looked them over carefully and do not see any errors therein.

If he will kindly point out what letters are wrong, and I will have them corrected.

Please cancel the previous claims and insert the

following in place of them.

B' Claim 1, In an Underreamer, the combination with a round mandrel reduced at its lower end, and the said reduced part threaded at its upper end, with a collar screwed thereon, Substantially as set forth.

Claim 2, In an Underreamer, the combination with a round mandrel reduced at its lower end, with two

seats, one on each side, extending part of the way of the said reduced part, with a slot extending the length of the seat and through the central of mandrel Substantially as set forth.

Claim 3, In an Underreamer, the combination with a round mandrel reduced at its lower end, with a collar screwed thereon, with a flat tongue ~~screwed thereon~~ extending across the lower end of the reduced part and below the collar, Substantially as set forth.
[883]

Claim 4. In an Underreamer, the combination with a round mandrel reduced at its lower end, with a collar screwed thereon, and a flat tongue extending across the reduced part and below the collar, and two cutters with a lug on each side to engage with the collar b, and tongue m, Substantially as set forth.

Claim 5. In an Underreamer, the combination with a round mandrel reduced at its lower end, with a collar screwed thereon, with two cutters engaging against collar and tongue, and extending below and made V shaped on the inside, Substantially as set forth.

Claim 6. In an underreamer, the combination with a round mandrel reduced at its lower end, with a collar screwed thereon, and two cutters fitting within the same, and each provided with a lug ~~to come in contact~~ on the inner side and at the upper end, and the said lug to come in contact with the arrow shaped head on plunger and to fit into mandrel, Substantially as set forth.

Claim 7. In an underreamer, the combination with a round mandrel reduced at its lower end, with

a collar screwed thereon, and two cutters provided at the upper end and on the *Under* side with a *Lug*, and a recess cut in said cutters at the base of said lug as shown at g, *Substantially* as set forth.

Resp't,

FRED W. JONES.

Claim 8. In an Underreamer, the combination with a round mandrel reduced at its lower end, with a collar screwed thereon, and two cutters provided with a lug on the inner side and a recess at the base of each lug and held in place by a plunger with an arrow shaped head and the plunger provided with a nut at its upper end, with a collar to engage with the top of the tapering, threaded pin o. *Substantially* as set forth. [884]

115,608. Paper No. 5.

Amdt. (drg.)

\$50¢ received

Nov. 30, 1903. MO.

Chief Clerk U. S. Patent Office.

Santa Paula, Calif., Nov. 24, 1903.

Underreamer for Oil Well purposes filed July 14, 1902, Ser. No. 115,608.

Please change the letters on the drawing to the same style as the letters on the specifications. Please find inclosed fifty cts. for same.

Resp't,

FRED W. JONES.

[Endorsed]: Jones, F. W. C U. S. Patent Office, Number 203,213. Received Nov. 30, 1903, Chief Clerk. Rec'd in Div. C, Nov. 30, 1903. Drawing

ordered Dec. 4, 03. Drawing corrected 50¢ Pd and to Examr. Dec. 12-03. Forward to Mail Room for Div. 38, Dec. 12, 03. Mail Room Transfer to Div. 38, 12.14.03. U. S. Patent Office, Dec. 14, 1903, Division 38. [885]

Div. Room 378.

Address only

"The Commissioner of Patents,
Washington, D. C.,"
and not any official by name.

Paper No. 6

All communications respecting this application should give the serial number, date of filing, title of invention, and name of applicant.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

Washington, Dec. 18, 1903.

Mailed Dec. 18, 1903.

Frederick W. Jones,
Santa Paula,
Cal.

Please find below a communication from the EX-
your
AMINER in charge of the application of for Under-
reamer for Oil-Well Purposes, filed July 14, 1902,
Serial No. 115,608.

F. I. ALLEN,
~~THOMAS EWING~~,
Commissioner of Patents.

In response to amendment of Nov. 30, 1903:

Applicant is required to rewrite the last amendment. This amendment should be directed to be canceled and a new one written in accordance with the directions given in Rule 45 of the Rules of Practice, noticing in particular that all interlineations and erasures must be clearly referred to in the margin and that there must be a wide margin reserved on the left hand side of the page. No lead pencil writing can be accepted by the office.

The drawing appears to be inaccurate. The construction of the reduced portion M is not clearly shown. It appears to the examiner that M. in Figs. 1 and 2 should be shown in cross-section or else "I" would not be visible. A view of the lower portion should be shown, taken at right angles to that shown in Figs. 1 and 2, to show the slot which is now not clearly shown. [886]

Claim 2 is objected to for the reason that the drawing does not show a slot arranged as set forth in the claim. Applicant should define what is meant by the term "seat." Is *is* the face of M or the chamber between M and the collar. The work "central" should be center (line 7) and "the" should be inserted after "of," same line.

Claims 1 and 3 do not appear to be consistent. Claim 1 includes a mandrel reduced at its lower end and from the rest of the claim it would appear that the element M was intended to be included as a portion of the reduced portion. In claim 3 the tongue appears to be a separate element from the reduced portion. Applicant cannot include one element twice in the same claim.

Applicant should clearly define the terms used in the claims in the specification so it will be clear what is meant. The drawing does not show the tongue arranged as set forth in the claim.

Claim 4 is objected to for the same reasons as claim 3, and also because "b" in lines 6 and 7, should be capital letters.

Claim 5 is objected to as the word "with" in line 4 should be canceled. The tongue referred to in line 5

is not included as an element of the claim as it should be. The letter "v" in line 6 should be V.

Claim 6 is objected to as the "head" referred to in line 9 is not included as an element of the claim. Line 10 appears incorrect as the slot is in the tongue and this element should be included to make a complete device.

Claim 7 is objected to as the word "under" in line 5, should be inner. The claim should set forth the same structure for the lugs to co-operate with. As the claims stand they have no function.

Claim 8 can not be considered as it appears on a separate sheet of paper after the signature of the applicant.

Applicant is again advised to employ a competent attorney to prosecute his application.

A. P. SHAW,
Ex.

M. E. P. [887]

Serial No. 115,608. Paper No. 7.

Authority for copies.

Filed Aug. 21, 1915.

Bakersfield, Cal., Aug. 14th, 1915.

Commissioner of Patents,
Washington, D. C.

Dear Sir:

On or about July 14, 1902, I filed an application for U. S. Patent on Underreamer for Oil Well Purposes, the serial number of which I believe was 115,608.

Kindly furnish Frederick S. Lyon, of Los Angeles, California, a certified copy of the File Wrappers and

Contents of such application, including copies of the drawings and all records in connection therewith, at the cost and expense of said Frederick S. Lyon as he shall desire and order, and oblige

Yours very truly,

FRED W. JONES,

Formerly of Santa Paula, California. [888]

THIS MEMORANDUM SHOULD UNDER NO
CIRCUMSTANCES BE DESTROYED OR
OTHERWISE PERMANENTLY REMOVED
FROM THE FILE.

~~Serial No.~~

Application of F. W. Jones,
for Letters patent on
received incomplete

Petition:

Oath: form sent. new req'd, April 25, 02.

Marked copy of rules sent.

Specification: reqr. Dec. 23, 1901.

Again req'd Apr. 25,/02.

Drawing: .

Fee:

General:

The following are the numbers of the Chief Clerk's
Letters relating to this case:

(1) (4)

(2) (5)

(3) (6)

[889]

Fig. 2.

Fig. 1.

Fig. 3.

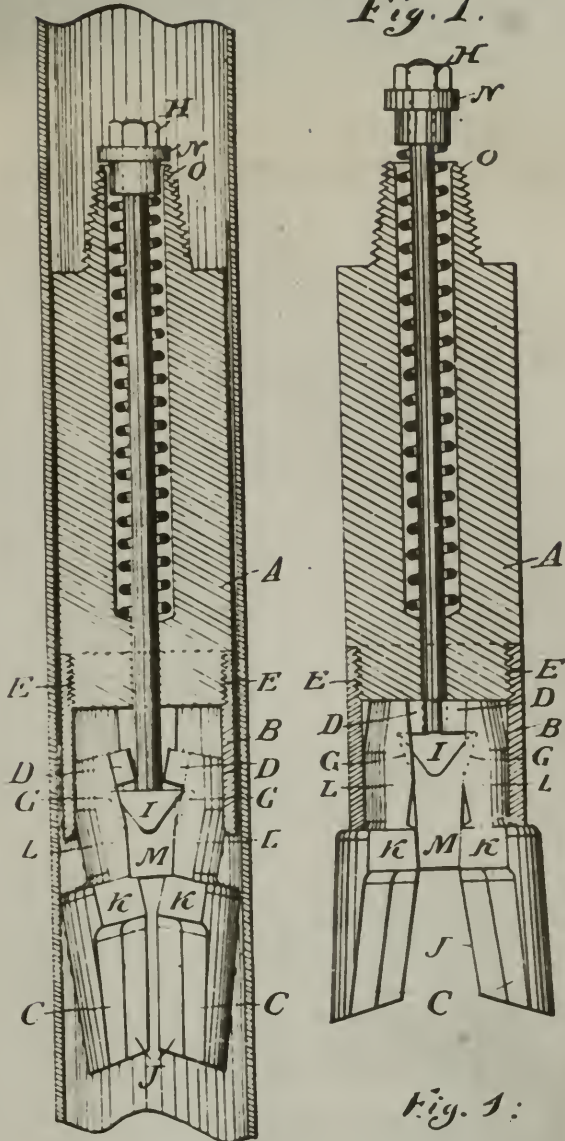
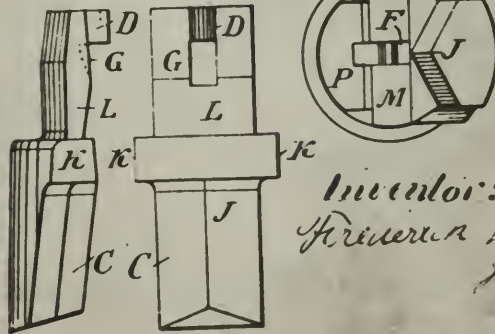


Fig. 1.

Fig. 5.



Witnesses:
L. May.

Inventor:
Frederick William
Jewett

1901.

CONTENTS:

166. Artesian & Oil Wells.

Print.

6 Reamers.

1½ Application Papers OK.

1. Letter Oct. 6, 1902.

2. Amendt. A, March 14, 1903.

3. Letter March 30-03.

4. Amdt. B, Nov. 30-03.

5. Amdt. (drg) Nov. 30-03.

6. Letter, Dec. 18-03.

7. Authority for copies, Aug. 21, 1915.

TITLE:

Improvement in.

Note: [Photograph of drawings appears in original on last page just prior to endorsement].

[Endorsed]: A-4—Eq. Consol. with B-62—Eq. Elihu C. Wilson vs. Union Tool Co. Filed Feb. 25, 1916. Wm. M. Van Dyke, Clerk. By Chas. N. Williams, Deputy. File Wrapper and Contents. Appln. Frederick William Jones for Patent. Defts. Ex. Filed Mar. 9, 1916. Wm. M. Van Dyke, Clerk. Floyd S. Sisk, Deputy. [890]

DOUBLE "F" STYLE UNDER-REAMERS

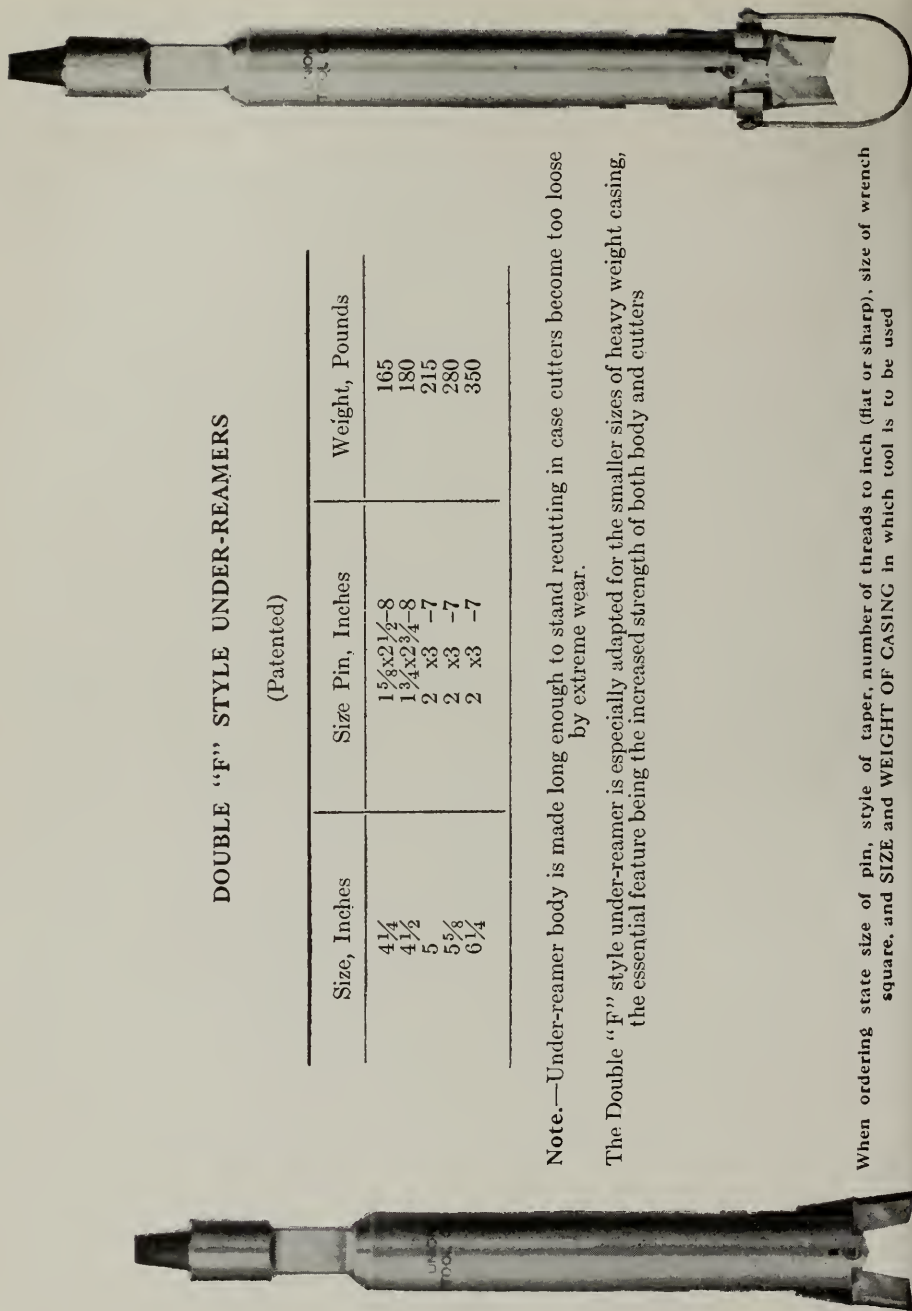
(Patented)

Size, Inches	Size Pin, Inches	Weight, Pounds
$4\frac{1}{4}$	$1\frac{5}{8} \times 2\frac{1}{2} - 8$	165
$4\frac{1}{2}$	$1\frac{3}{4} \times 2\frac{3}{4} - 8$	180
5	2 x3 -7	215
$5\frac{5}{8}$	2 x3 -7	280
$6\frac{1}{4}$	2 x3 -7	350

Note.—Under-reamer body is made long enough to stand recutting in case cutters become too loose by extreme wear.

The Double "F" style under-reamer is especially adapted for the smaller sizes of heavy weight casing, the essential feature being the increased strength of both body and cutters

When ordering state size of pin, style of taper, number of threads to inch (flat or sharp), size of wrench square, and SIZE and WEIGHT OF CASING in which tool is to be used



DRILLING TOOLS

CUTTERS AND PARTS FOR DOUBLE "D" STYLE UNDER-REAMERS

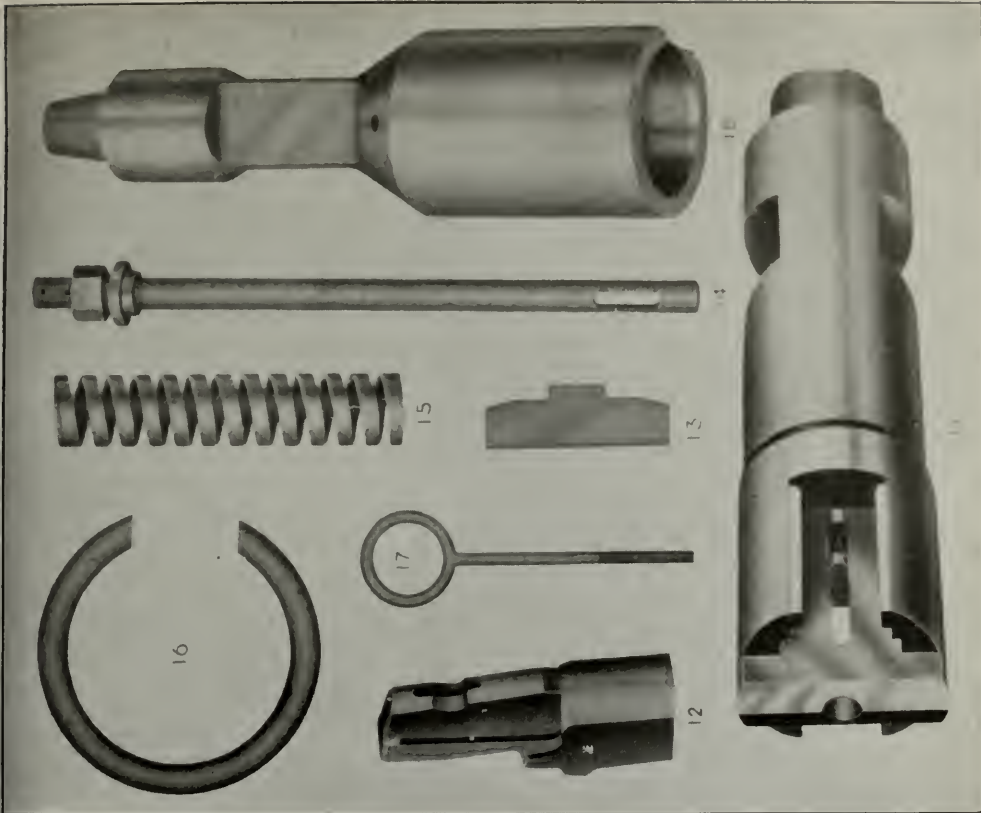
Cutters (Set of 2)

Size Inches	Weight Pounds	Size Inches	Weight Pounds
6¼	30	10	134
6⅝	34	11⅝	164
7	46	12½	206
7⅝	60	13½	236
8¼	76	15½	280
9	88	18	310
9⅝	105	20	360

Parts

Part Number	Number Required	Name
11	1	Body
12	2	Cutters
13	1	Key
14	1	Mandrel
15	1	Spring
16	1	Setting Ring
17	1	Eye Bolt
18	1	Sub

When ordering extra cutters or parts, state serial number stamped on reamer square, and SIZE and WEIGHT of CASING in which cutters are to be used.



DRILLING TOOLS

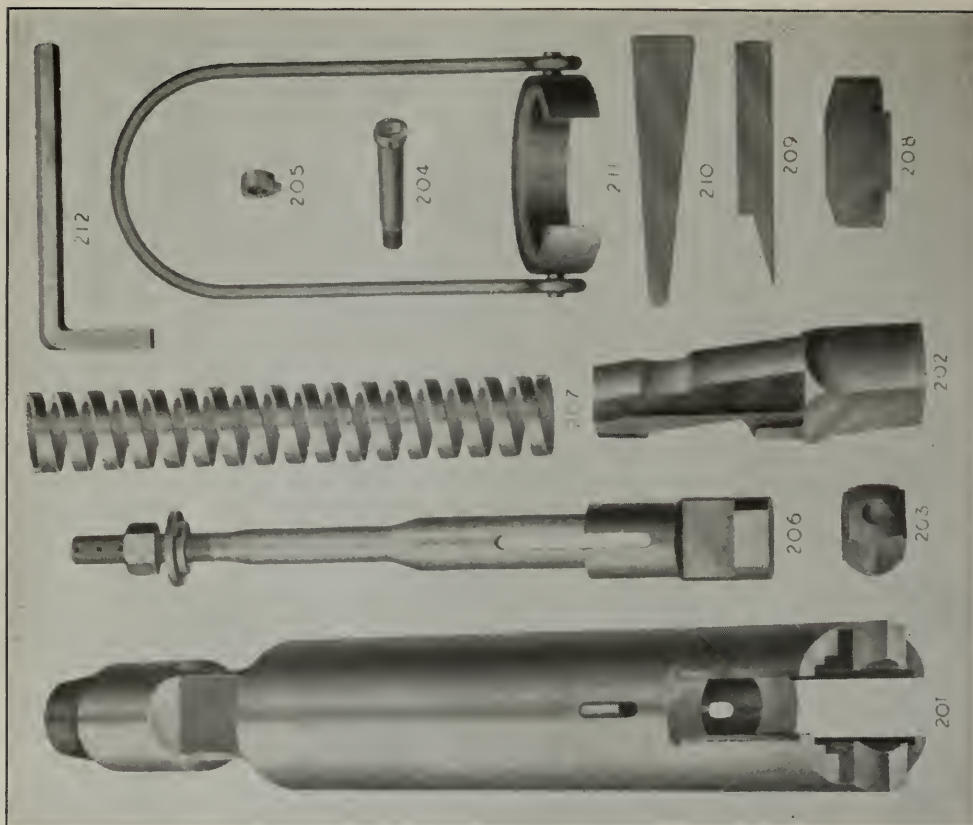
CUTTERS AND PARTS FOR DOUBLE "F" STYLE UNDER-REAMERS

Cutters (Set of 2)

Size, Inches	Weight, Pounds
$4\frac{1}{4}$	12
$4\frac{1}{2}$	15
5	21
$5\frac{5}{8}$	30
$6\frac{1}{4}$	38

Parts

Part Number	Number Required	Name
201	1	Body
202	2	Cutter
203	1	Tongue
204	1	Tongue Pin
205	1	Tongue Pin Nut
206	1	Mandrel
207	1	Spring
208	1	Mandrel Key
209	1	Wedge
210	1	Pilot Key
211	1	Setting Tool
212	1	Tongue Pin Wrench

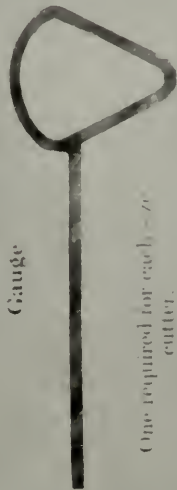


When ordering extra cutters or parts, state serial number stamped on reamer square and SIZE and WEIGHT OF CASING in which cutters are to be used.

DRILLING TOOLS

DOUBLE "D" STYLE UNDER-REAMER DRESSING TOOLS

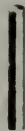
Gauge



One required for each size cutter.

T-140

Dressing Block Gauge Pin



T-141

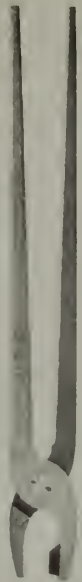
Weight 5 Pounds

One required for each dressing block



T-142

Tongs



T-143

For holding cutters while being dressed

For Size Cutters, Inches	6 1/4	6 1/2	7	7 1/2	8	9
Weight, Pounds	10	10	12	12	14	16
For Size Cutters, Inches	10	11 1/2	12 1/2	13 1/2	15 1/2	18
Weight, Pounds	22	28	32	35	38	43

Dressing Blocks

Used for Dressing Under-reamer Cutters

Part Number	Size Cutters, Inches	Weight, Pounds
G-2388	6 1/4, 8 1/4 and 10	15.00
G-2389	7 1/2, 9 1/2 and 11 1/2	18.00
G-2390	12 1/2, 14 1/2 and 15 1/2	24.00

Note. Dressing Blocks for 18 and 20 inch under-reamer cutters furnished on order.

[Endorsement on Catalog]: Wilson vs. Union Tool Co. A-4, B-62 Consolidated; U. S. Dist. Court, So. Dist. of Cal., So. Division. Complainant's Exhibit Defendant's Catalog, and particularly pages 28 and 29 thereof. Leo Longley. Aug. 30, 1915. [891]

*United States District Court, Southern District of
California, Southern Division.*

IN EQUITY—NOS. A-4—B-62. “A-4—CONSOL-
IDATED.”

ELIHU C. WILSON,

Complainant,

vs.

UNION TOOL COMPANY,

Defendant.

Stipulation.

Defendant having taken an appeal to the United States Circuit Court of Appeals for the 9th Circuit, from the Interlocutory Decree in this suit, it is hereby stipulated and agreed by and between the parties to the above-entitled suit as follows:

That as a part of the transcript of record on appeal to be certified by the clerk of this court to said United States Circuit Court of Appeals for the 9th Circuit upon Defendant's said appeal the same shall include the following in place of a statement of evidence under Equity Rule 75:

A true and correct copy of all depositions in question and answer form, including a copy of all proceedings had during the taking of such depositions as the

same appear upon the record of this court, omitting only the formal certificates of the respective notaries.

This stipulation is made to save expense and to expedite said appeal, and it is agreed that in case the said appeal is sustained and said interlocutory decree reversed, or for any other reason appellant is adjudged by said United States Circuit Court of Appeals to recover its costs on said appeal, that twenty-five per cent (25%) of the cost of certifying such depositions and testimony, and of printing the same in the said [892] U. S. Circuit Court of Appeals, shall be deducted from the taxable cost, it being the intent hereof that it is the judgment of the respective parties that said 25% will cover excess in the cost of such certification over and above any condensed statement possible under Equity Rule 75, and will in the end save expense to both parties and will expedite the hearing and determination of this appeal.

Dated Los Angeles, California, November 2d, 1916.

RAYMOND IVES BLAKESLEE,

Solicitor for Complainant.

FREDERICK S. LYON,

Solicitor for Defendant.

Approved:

BLEDSON,

District Judge.

[Endorsed]: No. A-4—Consolidated. United States District Court, Southern District of California, Southern Division. Elihu C. Wilson, Complainant, vs. Union Tool Company, Defendant. In Equity.

Stipulation. Filed Nov. 2, 1916. Wm. M. Van Dyke, Clerk. By R. S. Zimmerman, Deputy Clerk. Frederick S. Lyon, 504-7 Merchants Trust Building, Los Angeles, Cal., Solicitor for Defendant. [893]

UNITED STATES OF AMERICA.

*District Court of the United States, Southern District
of California, Southern Division.*

Clerk's Office.

Nos. A-4—B-62—"A-4 CONSOLIDATED."

ELIHU C. WILSON,

Complainant,

vs.

UNION TOOL COMPANY,

Defendant.

Praecipe for Transcript.

To the Clerk of said Court:

Sir: Please issue as a Transcript of Record on Defendant's appeal a true and correct copy of each of the following, all under due certificate:

The Original Bill of Complaint in A-4, filed Feb. 14, 1913.

Defendant's Answer, Filed April 5th, 1913.

Motion to Strike Counterclaim.

Minute Order of July 14, 1913, Striking Out Counterclaim.

The Original Bill of Complaint in B-62, filed Dec. 28th, 1914.

Defendant's Answer in B-62, filed March 17, 1915.

Amended Bill of Complaint in B-62.

Minute Order of Feb. 15, 1915 in B-62; also same in A-4.

Minute Order of Feb. 8, 1915 in B-62, and denying motion to dismiss.

Minute Order of April 19, 1915 in A-4; also same in B-62.

Complainant's Motion to Amend, filed Jan. 30, 1915, in B-62.

Complainant's Motion to Consolidate, filed in A-4, Jan. 2, 1915; same in B-62 filed Jan. 9, 1915.

Stipulation filed June 31, 1915, as to amendments of answers in A-4 and B-62. [894]

Interlocutory Decree filed September 8, 1916.

Opinion of Court.

Order Allowing Rehearing.

Opinion of Court on Rehearing.

Petition for Order Allowing Appeal.

Order Allowing Appeal.

Assignments of Error.

Bond on Appeal.

All paper exhibits except "Complaint's Exhibits F. W. Jones Reamer Photos";

—and a copy of all depositions taken and filed on behalf of the parties as per stipulation and Order of Court.

FREDERICK S. LYON,

Solicitor for Defendant, Union Tool Company.

[Endorsed]: No. A-4-B-62 "A-4 Consolidated."
U. S. District Court, Southern District of California,
Southern Division. Elihu C. Wilson, Complainant,
vs. Union Tool Company, Defendant. Praeceptum for
Transcript. Received a Copy of the Within This

2d Day of November, 1916. Raymond Ives Blakeslee, Solicitor for Complainant. Filed Nov. 4, 1916. Wm. M. Van Dyke, Clerk. By Chas. N. Williams, Deputy Clerk. [895]

UNITED STATES OF AMERICA.

District Court of the United States, Southern District of California, Southern Division.

Clerk's Office.

IN EQUITY—No. A-4—B-62 CONSOLIDATED.

ELIHU C. WILSON

vs.

UNION TOOL COMPANY.

Amended Praecept for Transcript of Record.

To the Clerk of said Court:

Sir: Please issue as a part of the transcript on appeal only copies of pages 28 and 29 as a copy of "Complainant's Exhibit Defendant's Catalog and particularly pages 28 and 29 thereof."

FREDERICK S. LYON,

Solicitor for Defendant.

[Endorsed]: In Equity. A. Consolidated. No. A-4 — B-62—Cons. U. S. District Court, Southern District of California, So. Div. E. C. Wilson v. Union Tool Co. Amended Praecept for Copy Exhibit as Part Transcript of Record on Appeal. Received a copy of the within this 2d day of Jany, 1917. Raymond Ives Blakeslee, Solicitor for Complainant. Filed Jan. 2, 1917. Wm. M. Van Dyke, Clerk. Leslie S. Colyer, Deputy Clerk. [896]

*In the District Court of the United States, in and
for the Southern District of California, South-
ern Division.*

N . A-4 and B-62 CONSOLIDATED.

ELIHU C. WILSON,

Complainant,

vs.

UNION TOOL COMPANY,

Defendant.

**Certificate of Clerk U. S. District Court to Tran-
script of Record.**

I, Wm. M. Van Dyke, Clerk of the District Court of the United States of America, in and for the Southern District of California, do hereby certify the foregoing eight hundred and ninety-six (896) type-written pages, numbered from 1 to 896 inclusive, and comprised in two (2) volumes, to be a full, true and correct copy of the Bill of Complaint in case A-4, Answer in case A-4, Notice of Motion and Motion to Strike Counterclaim, in case A-4, Minute Order Striking Out Counterclaim in case A-4, Complainant's Motion to Consolidate in case A-4, Bill of Complaint in case, B-62, Complainant's Motion to Consolidate in case, B-62, Complainant's Motion to Amend (with Amended Bill attached) in case B-62, Minute Order of February 8, 1915, in case B-62, Minute Order of February 15, 1915, in each of the cases A-4 and B-62, Answer in B-62, Minute Order of April 19, 1915, in each of the cases A-4 and B-62, Stipulation as to Amendments of Answers in both above-mentioned cases, Opinion of Court (Memoran-

dum Decision on Merits) in consolidated case, Order Allowing Rehearing, Opinion of Court on Rehearing (Memorandum on Ruling on Petition for Rehearing), Interlocutory Decree, Proofs on behalf of respective parties, Paper Exhibits, Stipulation in regard to record on appeal, Praecipe and Amended Praecipe, said last-mentioned Opinions, Order, Decree, Proofs, Exhibits, Stipulation, Praecipe and Amended Praecipe having been filed in the consolidated case, [897] and that all of said copies hereinbefore enumerated, together with the certified transcript of a portion of record heretofore, to wit, on January 6, 1917, issued out of this office and transmitted to the clerk of the Circuit Court of Appeals, constitute the transcript of the record on appeal in the above-entitled cause as specified in the Praecipe and Amended Praecipe aforesaid filed in my office on behalf of the appellant, defendant herein, by his solicitor of record.

I do further certify that the cost of said record is \$533.80, the amount whereof has been paid me by the Union Tool Company, the appellant.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seal of said District Court of the United States of America, in and for the Southern District of California, Southern Division, this 9th day of January, in the year of our Lord one thousand nine hundred and seventeen, and of our Independence the one hundred and forty-first.

[Seal]

WM. M. VAN DYKE,

Clerk of the District Court of the United States of America, in and for the Southern District of California. [898]

[Endorsed]: No. 2918. United States Circuit Court of Appeals for the Ninth Circuit. Union Tool Company, Appellant, vs. Elihu C. Wilson, Appellee. Transcript of the Record. Upon Appeal from the United States District Court for the Southern District of California, Southern Division.

Filed January 11, 1917.

F. D. MONCKTON,
Clerk of the United States Circuit Court of Appeals
for the Ninth Circuit.

By Paul P. O'Brien,
Deputy Clerk.

United States
Circuit Court of Appeals
For the Ninth Circuit.

UNION TOOL COMPANY,

Appellant,

vs.

ELIHU C. WILSON,

Appellee.

PORTION OF THE TRANSCRIPT OF RECORD.

Upon Appeal from the United States District Court
for the Southern District of California,
Southern Division.

Citation.

UNITED STATES OF AMERICA,—ss:

The President of the United States to Elihu C. Wilson, GREETING:

You are hereby cited and admonished to be and appear at a United States Circuit Court of Appeals for the Ninth Circuit, to be holden at the city of San Francisco, in the State of California, within thirty (30) days from the date hereof, pursuant to an order allowing an appeal entered and of record in the clerk's office of the United States District Court for the Southern District of California, Southern Division, in suit in Equity known as No. A-4—Consolidated therein, and wherein you are complainant and appellee and Union Tool Company is defendant and appellant, to show cause, if any there be, why the Interlocutory decree of said Court made and entered therein, ordering, adjudging and decreeing that an injunction be issued restraining and enjoining defendant and appellant as in said Interlocutory Decree set forth, and adjudging that you recover of said defendant and appellant certain money as costs, should not be corrected, and why speedy justice should not be done to the parties in that behalf.

Dated September 14th, 1916.

EDWARD E. CUSHMAN,
United States District Judge.

Due service and receipt of a copy of the foregoing Citation is hereby admitted this 14th day of September, 1916.

RAYMOND IVES BLAKESLEE,
Solicitor for Complainant and Appellee.

[Endorsed]: No. A-4—Cons. U. S. District Court, Southern District of California, Southern Division. Elihu C. Wilson, Complainant and Appellee vs. Union Tool Company, Defendant and Appellant. Citation. Filed. Sep. 14, 1916. Wm. M. Van Dyke, Clerk. By Chas. N. Williams, Deputy Clerk.

United States District Court, Southern District of California, Southern Division.

IN EQUITY—NO. A-4—B-62—CONSOLIDATED.

ELIHU C. WILSON,

Complainant,

vs.

UNION TOOL COMPANY,

Defendant.

Petition for Appeal.

The defendant in the above-entitled suit conceiving itself aggrieved by the Interlocutory Decree made and entered in the above-entitled suit on September 8, 1916, granting an injunction, as in said Interlocutory Decree set forth, against defendant, comes now by Frederick S. Lyon, Esq., its solicitor and counsel, and petitions said Court for an order allowing defendant to prosecute an appeal from said Interlocutory Decree to the Honorable The United States Circuit Court of Appeals for the Ninth Circuit under and according to the laws of the United States in that behalf made and provided, and also for an order fixing the sum of security which the defendant shall

give and furnish upon said appeal, the same to operate as a supersedeas of and to suspend the issuance of any injunction ordered by said Interlocutory Decree, and as a supersedeas of the judgment for costs provided for in said Interlocutory Decree, pending the determination of such appeal by said United States Circuit Court of Appeals for the Ninth Circuit.

FREDERICK S. LYON,
Solicitor for Defendant. [1]

[Endorsed]: No. A-4—B-62—Consolidated. United States District Court, Southern District of California, Southern Division. Elihu C. Wilson, Complainant, vs. Union Tool Company, Defendant. In Equity. Petition for Appeal. Filed Sep. 11, 1916. Wm. M. Van Dyke, Clerk. By Chas. N. Williams, Deputy Clerk. Frederick S. Lyon, 504-7 Merchants Trust Building, Los Angeles, Cal., Solicitor for Defendant. [2]

*United States District Court, Southern District of
California, Southern Division.*

IN EQUITY—NO. A-4—B-62—CONSOLIDATED.

ELIHU C. WILSON,

Complainant,

vs.

UNION TOOL COMPANY,

Defendant.

Assignments of Error.

Comes now defendant above named and specifies

and assigns the following as the errors upon which it will rely upon its appeal to the United States Circuit Court of Appeals for the Ninth Circuit from the Interlocutory Decree of September 8th, 1916, granting an injunction against defendant as in said Interlocutory Decree set forth:

That said District Court of the United States for the Southern District of California, Southern Division, in making and entering said decree erred as follows:

1. In adjudging and decreeing that claims 2, 4, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 19, or either or any thereof, of the Wilson Patent in suit No. 827,595 were or are good or valid in law.

2. In adjudging or decreeing that either claim 9 or claim 19 of said letters patent No. 827,595 was, has been or is infringed by defendant in any manner whatsoever, either by all or any of the underreamers manufactured or sold or leased by defendant like either of the exhibits referred to in paragraph 4 or 5 of said Interlocutory Decree or in any manner or by any device manufactured, used, sold or leased by defendant. [3]

3. In not adjudging and decreeing that defendant has not infringed either said claim 9 or said claim 19 in any manner whatsoever.

4. In not ordering, adjudging and decreeing that the Bill of Complaint in suit No. A-1 be dismissed.

5. In not ordering, adjudging and decreeing that the Bill of Complaint in suit No. B-62 be dismissed.

6. In not ordering, adjudging and decreeing that complainant was bound by the election made in suit

No. A-4 and could not thereafter maintain another suit against this defendant for the same cause of action, and that the pendency of the suit No. A-4 was a bar to the maintaining of the suit No. B-62 as to any of the acts or things charged in said suit No. A-4 to be an infringement by defendant of complainant's alleged patent or invention.

7. In ordering the suits Nos. A-4—B-62 be consolidated.

8. In ordering, adjudging and decreeing that said suits Nos. A-4—B-62 be consolidated, joined or merged together, or that the same constitute one unitary cause of action, or that by such consolidation defendant was thereby charged with infringement of claims 2, 4, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 19 of said patent No. 827,595.

9. In not ordering, adjudging and decreeing that each of said suits and such consolidation thereof be dismissed.

10. In not ordering, adjudging and decreeing that defendant had not in any manner infringed upon any of the claims of the so-called Wilson Patent No. 827,595.

11. In denying and not granting defendant's motion to dismiss the suit No. B-62 on the ground of the pendency undetermined of the suit No. A-4.

12. In not ordering, adjudging and decreeing that claims 9 and 19 of said patent No. 827,595 were void for want [4] of invention and as anticipated.

13. In ordering, adjudging and decreeing that defendant be restrained or enjoined either as set forth in paragraph V of said Interlocutory Decree or otherwise or at all.

In order that the foregoing Assignments of Error may be and appear of record, defendant presents the same to the Court and prays that such disposition may be made thereof as is in accordance with the laws of the United States.

WHEREFORE, the said defendant prays that the said Interlocutory Decree of this Court made and entered on Sept. 8th, 1916, and the injunction thereby granted and ordered be reversed and set aside, and the said Court be directed to enter a decree ordering and adjudging the said letters patent to be void and not to have been infringed by this defendant, and that the Bills of Complaint in said suits Nos. A-4—B-62 and each thereof be dismissed at the cost and expense of complainant.

All of which is respectfully submitted.

FREDERICK S. LYON,
Solicitor for Defendant.

[Endorsed]: No. A-4—B-62—Consolidated. United States District Court, Southern District of California, Southern Division. Elihu C. Wilson, Complainant, vs. Union Tool Company, Defendant. In Equity. Assignments of Error. Filed Sep. 11, 1916. Wm. M. Van Dyke, Clerk. By Chas. N. Williams, Deputy Clerk. Frederick S. Lyon, 504-7 Merchants Trust Building, Los Angeles, Cal., Solicitor for Defendant. [5]

*United States District Court, Southern District of
California, Southern Division.*

IN EQUITY—No. A-4—B-62—CONSOLIDATED.

ELIHU C. WILSON,

Complainant,

vs.

UNION TOOL COMPANY,

Defendant.

Order Allowing Appeal and Fixing Amount of Bond.

In the above-entitled suit, the defendant having filed its petition for an order allowing an appeal from the Interlocutory Decree of this Court made and entered in this suit on September 8, 1916, granting an injunction against defendant, together with Assignments of Error:

Now, on motion of Frederick S. Lyon, Esq., solicitor for defendant, it is ordered that said appeal be and hereby is allowed to defendant to the United States Circuit Court of Appeals for the Ninth Circuit from said Interlocutory Decree granting and allowing an injunction against defendant, and that the amount of defendant's bond on said appeal be and the same is hereby fixed in the sum of twenty-five thousand dollars, the same to act as a supersedeas of any judgment for costs and disbursements entered against defendant in accordance with said decree and as a supersedeas of and to suspend the issuance of any injunction against defendant as in said Interlocutory Decree ordered, pending the determination of said appeal by said United States Circuit Court of Appeals for the Ninth Circuit.

It is further ordered that upon the filing of such security a certified transcript of the records and proceedings herein, in accordance with the statutes and the Equity Rules, [6] be forthwith transmitted to said United States Circuit Court of Appeals for the Ninth Circuit.

Dated September 11th, 1916.

EDWARD E. CUSHMAN,
District Judge.

[Endorsed]: No. A-4-B-62—Consolidated.
United States District Court Southern District of
California, Southern Division. Elihu C. Wilson,
Complainant, vs. Union Tool Company, Defendant.
In Equity. Order Allowing Appeal and Fixing
Amount of Bond. Filed Sep. 11, 1916. Wm. M.
Van Dyke, Clerk. By Chas. N. Williams, Deputy
Clerk. Frederick S. Lyon, 504-7 Merchants Trust
Building. Los Angeles, Cal. Solicitor for Defendant. [7]

Approved as to form, 9/14/16.
RAYMOND IVES BLAKESLEE.

*United States District Court, Southern District of
California, Southern Division.*

IN EQUITY—No. A-4-B-62—Consolidated.
ELIHU C. WILSON,
Complainant,
vs.
UNION TOOL COMPANY,
Defendant.

Bond on Appeal.

KNOW ALL MEN BY THESE PRESENTS: That the Hartford Accident and Indemnity Co., a corporation of the State of Connecticut, and duly licensed to transact business in the State of California, is held and firmly bound unto Elihu C. Wilson, plaintiff in the above-entitled suit in the penal sum of twenty-five thousand (\$25,000) dollars, to be paid to the said Elihu C. Wilson, his heirs, assigns and legal representatives, for which payment, well and truly to be made, the Hartford Accident and Indemnity Co., binds itself, its successors and assigns firmly by these presents.

Sealed with its corporate seal and dated this 12th day of September, 1916.

The condition of this obligation is such that whereas the Union Tool Company, defendant in the above-entitled suit, is about to take an appeal to the United States Circuit Court of Appeals for the Ninth Circuit to reverse the Interlocutory Order or Decree made, rendered and entered on Sept. 8th, 1916, by the District Court of the United States for the Southern District of California, Southern Division, in the above-entitled cause, ordering, adjudging and decreeing that defendant be restrained and enjoined as in said Interlocutory Decree set forth.

And whereas said District Court of the United States [8] for the Southern District of California, Southern Division, has ordered and directed that said Injunction be suspended and the effect thereof stayed, during the pendency of said appeal, upon condition that the defendant give security that

it will well and truly pay to the complainant, Elihu C. Wilson, his heirs, assigns and legal representatives, all damages and profits which may be found or assessed against said defendant by reason of the suspension and staying of said injunction during the pendency of said appeal;

Now, therefore, the condition of this obligation is such that if the above-named defendant shall prosecute its said *said* appeal to effect and answer all costs which may be adjudged against it if it fail to make good its said appeal and if it shall pay to said Elihu C. Wilson, his heirs, assigns and legal representatives, all damages and profits which may be found or assessed against it by reason of the suspension and staying of said injunction, this obligation shall be void; otherwise to remain in full force and effect.

HARTFORD ACCIDENT AND INDEMNITY COMPANY.

[Seal]

By P. H. GRIFFITH,

Attorney in fact.

State of California,

County of Los Angeles,—ss.

On this 12th day of September, in the year nineteen hundred and sixteen, A. D., before me, Ethel M. Cooke, a notary public in and for the said county of Los Angeles, State of California, residing therein, duly commissioned and sworn, personally appeared P. H. Griffith, personally known to me to be the person described in and whose name he subscribed to the within instrument, as the attorney in fact of Hartford Accident and *and* acknowledged to me

that he subscribed the name of Hartford Accident thereto as surety and his own name as attorney in fact. [9]

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal in said county the day and year in this certificate first above written.

[Seal Indemnity Company and Indemnity Company.]

ETHEL M. COOK,

Notary Public in and for Los Angeles County, State of California.

My commission expires Sept. 7, 1919.

[Endorsed]: No. A-4—B-62—Consolidated. United States District Court, Southern District of California, Southern Division. Elihu C. Wilson, Complainant, vs. Union Tool Company, Defendant. In Equity. Bond on Appeal. Approved Sept. 14, 1916. Edward E. Cushman, District Judge. Filed Sept. 14, 1916. Wm. M. Van Dyke, Clerk. By Chas. N. Williams, Deputy Clerk. Frederick S. Lyon, 504-7 Merchants Trust Building, Los Angeles, Cal., Solicitor for Defendant. [10]

*In the District Court of the United States, in and for
the Southern District of California, Southern
Division.*

No. A-4—B-62—Eq.

UNION TOOL COMPANY,

Appellant,

vs.

ELIHU C. WILSON,

Appellee.

I, Wm. M. Van Dyke, Clerk of the District Court of the United States of America, in and for the Southern District of California, do hereby certify the foregoing ten (10) pages, to be a full, true and correct copy of Petition for Appeal, Assignments of Error, Order Allowing Appeal and Fixing Amount of Bond, and Bond on Appeal in the above and therein entitled cause, and that said copies constitute a portion of the transcript of record on appeal in the case entitled as above, said portion of the transcript, together with the original Citation, hereto attached, being forwarded to the Clerk of the United States Circuit Court of Appeals for the Ninth Circuit for filing in the office of said clerk in advance of the remainder of said transcript at the direction of Frederick S. Lyon, Esq., solicitor for appellant, and the remainder will follow in separate volumes.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the District Court of the United States of America, in and for the Southern District of California, Southern Division, this 6th day of January, in the year of our Lord,

one thousand nine hundred and sixteen, and of our Independence, the one hundred and forty-first.

[Seal]

WM. M. VAN DYKE,

Clerk of the District Court of the United States of America, in and for the Southern District of California. [11]

[Endorsed]: No. 2918. United States Circuit Court of Appeals for the Ninth Circuit. Union Tool Company, Appellant, vs. Elihu C. Wilson, Appellee. Portion of the Transcript of the Record. Upon Appeal from the United States District Court for the Southern District of California, Southern Division. Filed January 8, 1917.

F. D. MONCKTON,

Clerk of the United States Circuit Court of Appeals for the Ninth Circuit.

By Paul P. O'Brien,
Deputy Clerk.

*In the United States Circuit Court of Appeals for
the Ninth Circuit.*

UNION TOOL COMPANY,

Appellant,

vs.

ELIHU C. WILSON,

Appellee.

**Order Extending Time to January 3, 1917, to File
Record and Docket Cause.**

Good cause appearing therefor, it is hereby ordered that the time heretofore allowed said appellant to docket said cause and file the record thereof with the clerk of the United States Circuit Court of Appeals for the Ninth Circuit be, and the same hereby is, enlarged and extended to and including the 3d day of January, 1917.

Dated Los Angeles, California, September 14th, 1916.

EDWARD E. CUSHMAN,
United States District Judge.

[Endorsed]: No. —. United States Circuit Court of Appeals for the Ninth Circuit. Union Tool Company, Appellant, vs. Elihu C. Wilson, Appellee. Order Under Rule 16 Enlarging Time to January 3, 1916 to File Record Thereof and to Docket Case. Filed Oct. 2, 1916. F. D. Monckton, Clerk.

*United States Circuit Court of Appeals for the Ninth
Circuit.*

2 CASES CONSOLIDATED.

UNION TOOL COMPANY,

Appellant,

vs.

ELIHU C. WILSON,

Appellee.

**Order Extending Time to File Record and Docket
Cause to February 1, 1917.**

Good cause appearing therefor, it is hereby ordered that the time within which appellant in the above-entitled action may file record and docket cause in the United States Circuit Court of Appeals for the Ninth Circuit be, and the same hereby is extended to and including the 1st day of February, 1917.

Los Angeles, California, December 22, 1916.

ROSS,

Circuit Judge.

[Endorsed]: 2 Cases Consolidated. No. ——. United States Circuit Court of Appeals for the Ninth Circuit. Union Tool Company, Appellant, vs. Elihu C. Wilson, Appellee. Order Extending Time to File Record and Docket Cause to February 1, 1917. Filed Dec. 27, 1916. F. D. Monckton, Clerk.

No. 2918. United States Circuit Court of Appeals for the Ninth Circuit. Two Orders Under Rule 16 Enlarging Time to February 1, 1917, to File Record Thereof and to Docket Case. Refiled Jan. 8, 1917. F. D. Monckton, Clerk.

*In the United States Circuit Court of Appeals for
the Ninth Circuit.*

No. 2918.

UNION TOOL COMPANY,

Appellant,

vs.

ELIHU C. WILSON,

Appellee.

**Stipulation Re Defendant's Exhibit Bole Patent and
Defendant's Double Patent No. 1, etc.**

It is hereby stipulated and agreed that the attached are true and correct copies respectively of the Double Patent No. 734,833 introduced in evidence as "Defendant's Exhibit, Double Patent No. 1" and of the Bole Patent No. 1,080,135, introduced in evidence as "Defendant's Exhibit, Bole Patent"; that this stipulation and the attached exhibits be filed in the above-entitled court in this cause, as a part of the Transcript of Record on Appeal with the same force and effect as though included within the return and certificate of the Clerk of the District Court of the United States for the Southern District of California, to avoid the necessity of a Writ of Certiorari for diminution of the record, said exhibits having been omitted from said transcript by error.

FREDERICK. S. LYON,

Solicitor for Appellant.

RAYMOND I. BLAKESLEE,

Solicitor for Appellee.

Defendant's Exhibit, Bole Patent.

R. E. BOLE.
UNDERREAMEE.

APPLICATION FILED FEB. 10, 1913.

1,080,135.

Patented Dec. 2, 1913.

Fig. 2.

Fig. 1

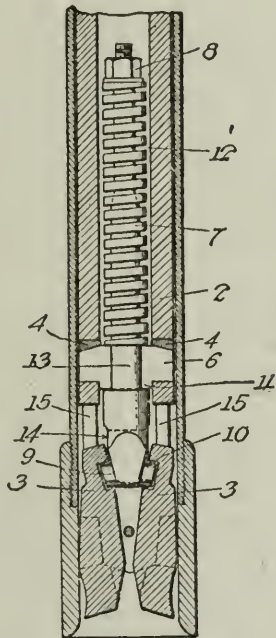
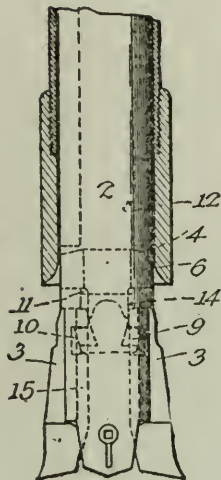


Fig. 3

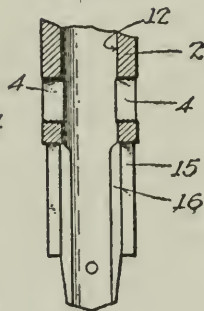


Fig. 6.



Fig. 7.



Fig. 4.

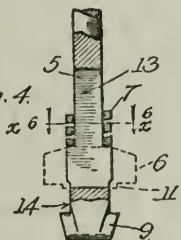
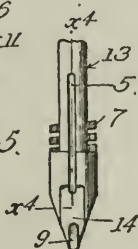


Fig. 5.



Witnesses:

Lute A. Allen.
Sully Russo.

Inventor:
Robert E. Bole;

By Lyon & Hackley
Attys.

UNITED STATES PATENT OFFICE.

ROBERT E. BOLE, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF
EDWARD DOUBLE, OF LOS ANGELES, CALIFORNIA.
UNDERREAMER.

1,080,135.

Specification of Letters Patent.

Patented Dec. 2, 1911

Application filed February 19, 1913. Serial No. 749,343.

To all whom it may concern:

Be it known that I, ROBERT E. BOLE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Underreamer, of which the following is a specification.

This invention relates to an improvement in underreamers and has for its particular object, the provision of a simple and exceedingly durable mounting of the spring actuated rod or mandrel within and on the body of the underreamer.

The invention consists in the constructions and combinations of parts hereinafter described and more particularly pointed out in the claims, and will be more readily understood by the accompanying drawings in which:

Figure 1 is a side view of an underreamer embodying my invention, the underreamer being shown as projecting just below the shoe of a well casing and a portion of the upper end of the body of the reamer and well casing being omitted, the spring actuated rod or mandrel and bits being shown in dotted lines in expanded or underreaming position. Fig. 2 is a similar longitudinal sectional view showing the underreamer within the well casing and the bits in collapsed position. Fig. 3 is a partial longitudinal sectional view of the body of the underreamer. Fig. 4 is a sectional view on the line x^4-x^4 of Fig. 5 of the spring actuated rod or mandrel, and showing the key or gib in dotted lines. Fig. 5 is a side view of the spring actuated rod or mandrel, a portion of the coil spring being indicated thereon. Fig. 6 is a cross sectional view on the line x^6-x^6 of Fig. 4 showing the relation of the coil spring and the mandrel or spring actuated rod. Fig. 7 is a perspective view of the key or gib.

In the type of underreamers illustrated, for example, in the patent to Wilson, No. 827,595, dated July 31st, 1906, the spring actuated rod or mandrel upon which the underreamer cutters or bits are carried, is shown as held in the center bore of the body portion of the underreamer by means of dowel-pins. Such construction was found in actual practice to be weak and liable to break, leaving the cutters and spring actuated rod or mandrel in the well hole. To obviate this weakness I provide the body por-

tion of above the upper ends of the bits 3 with a slot 4 and correspondingly slot the mandrel or spring actuated rod 13 as at 5. Through these slots I project a gib or key 6, the outer ends of the key or gib resting upon the bottom walls of the slots in the body portion and seating thereon. The slot 5 in the spring actuated rod or mandrel 13 is made of sufficient length to permit the necessary or desired reciprocation of the rod or mandrel in the body of the reamer, and in order to secure the proper tension on the spring 7 surrounding such rod or mandrel, I seat the lower end of the spring upon this gib or key and the upper end of the spring is compressed to a suitable degree by means of a nut 8 threaded onto the upper end of the spring actuated rod or mandrel. By adjusting this nut the tension of the spring and consequently the upward throw of the mandrel or rod in the body of the reamer may be regulated at will. This gib or key 6 is loosely mounted in the slot 4 of the mandrel or body, that is to say, it is not attached to said body by any means which mechanically fix it as a part of such body. The tension of the coiled spring 7 holds this key or gib 6 in position so that the wing or downwardly projecting portion 11 seats in the bore 12 of the body and the gib is so proportioned as to permit the passage thereof laterally through the slot 4 after the wing or projection 11 has been raised out of the lower extension of the bore 12. The lower end of this spring actuated rod or mandrel may be provided with wings or prongs 9 forming an integral T-head on which the bits 3 are mounted and tilt or move pivotally. In place of forming this T-head integral with the spring actuated rod, I may provide a slot (not shown) through the rod and utilize a removable key or gib, the ends of which seat in the sockets or key-seats 10 of the bits or cutters. The sockets or key-seats 10 of the bits are preferably somewhat larger than the wings 9, to permit of the necessary tilting action. The gib or key 6 is preferably provided with a wing or downwardly projecting portion 11 of sufficient width to just fit within the bore 12 of the body 2 and thus prevent the accidental displacement of the key. The lower end of the spring actuated rod or mandrel 13 is enlarged as shown, so as to provide flat bearing surfaces 14 for the inner faces at the 1

1,080,135

upper ends of the bits. Below the slot 4 in the body portion I leave sufficient metal to provide strong seats for the key or gib 6 and below such seats the body portion is formed as a hollow slotted extension 15, the side walls of the slot at each side being provided with dovetails 16 adapted to coact with corresponding dovetails on the bits, as shown in said patent to Wilson.

I claim:

1. An underreamer comprising a body having a central bore, a rod or mandrel mounted in said bore, said body provided with a slot, said rod provided with a longitudinal slot, a key or gib mounted in said slot and provided with a downwardly projecting portion adapted to contact with the wall of the central bore below said slot and prevent lateral displacement of the key from either side of the slot, a spring mounted on said gib and operatively connected with said rod, said rod provided at its lower end with a bit engaging head or key.

2. An underreamer comprising a body having a central bore, a rod mounted to reciprocate in said bore, said body and rod provided with slots, a key mounted in said slots, said key having a projection or wing projecting downward from the slot of the body into the central bore and preventing lateral motion of the key, a spring mounted on said key and coiled about said rod, means at the upper end of said rod adjustably connecting said rod and spring, means at the lower end of said rod for engaging and supporting the bits or cutters, and cutters or bits.

3. An underreamer comprising a body having a central bore, a rod or mandrel mounted in said bore, said body and rod provided with registering slots, a key or gib mounted in said slots and having a projection or wing fitting within the bore of said mandrel below said slots and shouldering against the wall upon transverse movement in either direction, a spring mounted on said gib and operatively connected with said rod, said rod provided at its lower end with bit engaging and supporting means, said rod being enlarged at its lower end and provided with surfaces adapted to support the inner ends of the bits or cutters, and bits or cutters mounted on said rod.

4. An underreamer comprising a body having a central bore, a rod or mandrel

mounted in said bore, said body and rod provided with registering slots, a key or gib mounted in said slots, the slot in the rod being of sufficient longitudinal extension to permit the movement of said rod longitudinally of said body, a key or gib loosely mounted in said slots and having a projection or wing projecting downward into the central bore below the walls of the slot in the body and anchoring said key or gib against movement transversely of said body, a spring mounted on said gib and operatively connected with said rod, said rod provided at its lower end with bit engaging means, bits tiltingly carried thereby, and bearings for the inner faces of said bits formed on said rod and adapted to prevent lateral displacement of said bits.

5. An underreamer comprising a body having a central bore, a rod mounted in said bore, said body and rod provided with registering slots, a key or gib loosely mounted in said slots and having means at the bottom for anchoring in said body, a spring surrounding said rod and connected thereto at the top thereof, and operatively connected to said key at its lower end, said rod provided with bit engaging means.

6. An underreamer comprising a body having a central bore, a spring actuated rod mounted in said bore, said rod provided with bit carrying means, and a key loosely mounted in said body and held therein by the tension of said spring.

7. An underreamer comprising a hollow body, a spring actuated rod mounted therein and provided with bit carrying means, and a key loosely mounted in said body and operatively connecting said rod and body.

8. An underreamer comprising a hollow body, a reciprocating rod, a spring and a key operatively mounting said rod in said body, said key fitting loosely in said body and held therein by spring tension on the top, and means preventing the key sliding laterally in the body without overcoming the downward pressure of the spring on the key.

In testimony whereof I have hereunto set my hand at Los Angeles, California, this 12th day of February, 1913.

ROBERT E. BOLE.

In presence of—

FREDERICK S. LYON,
F. A. CRANDALL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

Defendant's Exhibit Double Patent No. 1.

No. 734,833.

PATENTED JULY 28, 1903.

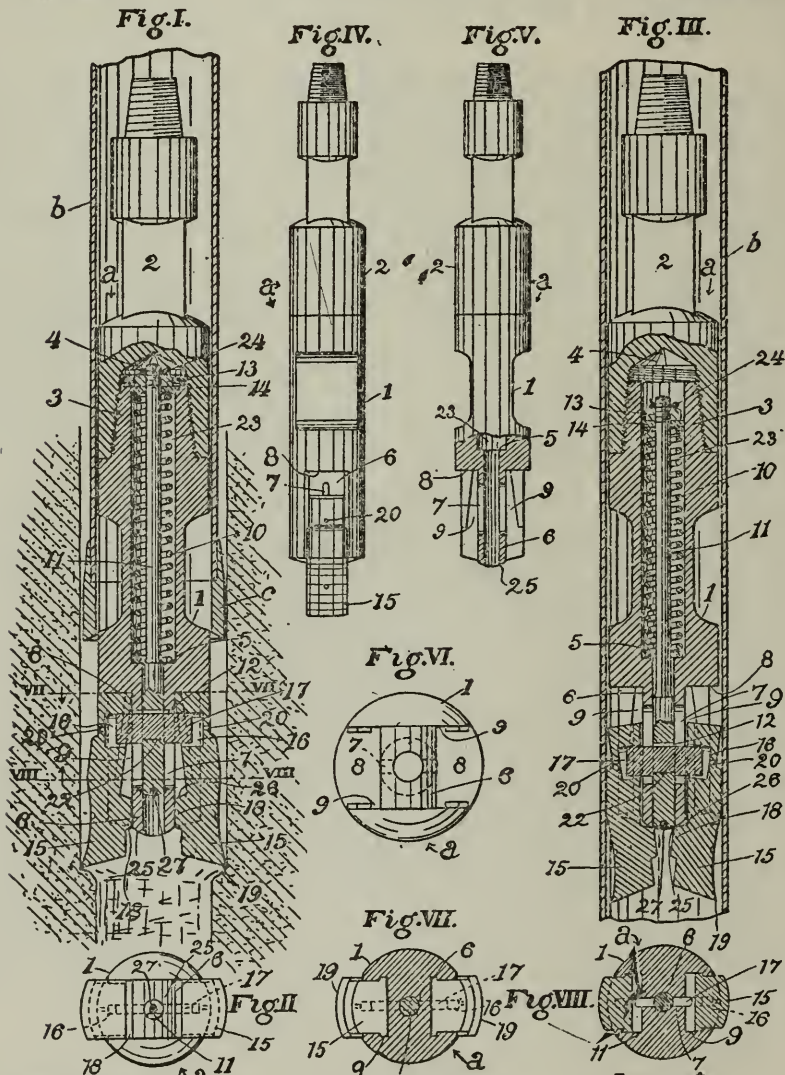
E. DOUBLE.

UNDERREAMER.

APPLICATION FILED OCT. 26, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses.
C. F. Riehy.
J. Townsend.

Inventor.
Edward Double
by Townsend Bros
his atty

No. 734,833.

PATENTED JULY 28, 1903.

E. DOUBLE.
UNDERREAMER.

APPLICATION FILED OCT. 26, 1901.

2 SHEETS-SHEET 2

NO MODEL.

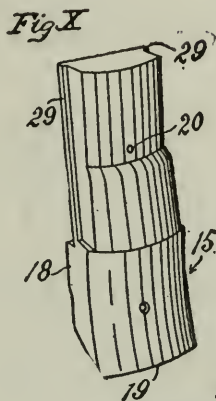
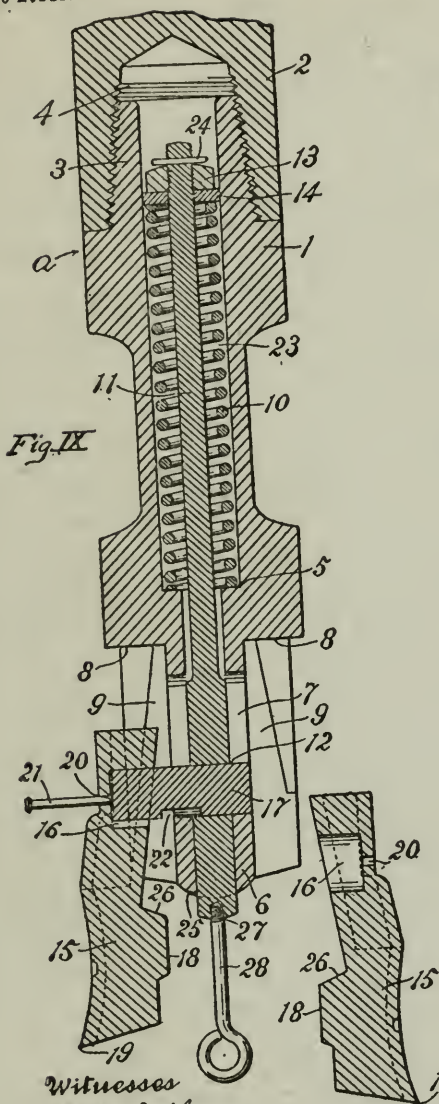


Fig. XI

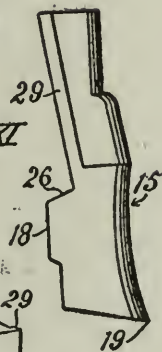
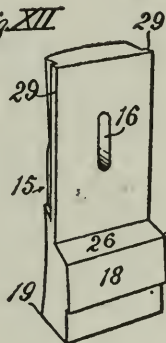


Fig. XII



Witnesses
C. C. Holly
J. Townsend.

Inventor
Edward Double
by Townsend Bros
his atty.

UNITED STATES PATENT OFFICE.

No. 734,833

Patented July 28, 1903

EDWARD DOUBLE, SANTA PAULA, CALIFORNIA.
UNDERREAMER.

SPECIFICATION forming part of Letters Patent No. 734,833, dated July 28, 1903.

Application filed October 26, 1901. Serial No. 80,144. (No model.)

To all whom it may concern:

Be it known that I, EDWARD DOUBLE, a citizen of the United States, residing at Santa Paula, in the county of Ventura and State of California, have invented a new and useful Underreamer, of which the following is a specification.

An object of this invention is to provide an underreamer which is easily constructed, effective in action, and will not be liable to any breakage or loss of parts while in operation.

My invention includes the novel underreamer and the combinations and parts hereinafter described and claimed and is capable of being carried out in various ways.

The accompanying drawings illustrate my invention.

Figure I is a view partly in vertical mid-section of an underreamer in operation below a well-casing, a portion of which is shown. Fig. II is a plan of the lower end of the underreamer with the slips in the position shown in Fig. I. Fig. III is a view of an underreamer with parts in position for passing through the casing. Portions are shown in vertical mid-section. A fragment of the casing is shown in axial section. Fig. IV is an elevation of the underreamer intact viewed from the right of Fig. III. Fig. V is an elevation of the underreamer-mandrel viewed from the right of Fig. IV, portions being broken away to expose the inner construction of the lower part of the mandrel. Fig. VI is an enlarged plan of the lower end of the underreamer-mandrel inverted. Figs. VII and VIII are sections on lines indicated by VII and VIII, respectively, in Fig. I, looking in the directions of the arrows, respectively. Fig. IX is an enlarged mid-sectional detail to illustrate the manner of applying or taking off the slips. Figs. X, XI, and XII illustrate one of the slips from different points of view.

a designates a hollow mandrel desirably constructed of a hollow body 1 and a joint member 2 screwed thereon, the hollow body 1 being furnished at its upper end with a screw-threaded pin 3 to screw into the socket 4 in the lower end of the joint member 2. The hollow mandrel is furnished with an internal shoulder 5, a downward extension 6, with oppositely-arranged parallel bearing-faces having a keyway 7 therein, shoulders 8 at the

sides of such extension, and upwardly and inwardly sloping tapering dovetail slipways 9 beneath said shoulders.

10 designates a spring on the shoulder 5 in the hollow mandrel.

11 designates a rod playing up and down in the mandrel and furnished with a key-seat 12 and supported by the spring 10. Preferably the rod 11 is furnished with a nut 13, screwed on its upper end, to be upheld by the spring 10.

14 designates a washer between the nut and the spring.

15 designates tilt-slips slidingly connected with the mandrel and playing in the slip-ways 9 and furnished with key-seats 16, respectively.

17 designates a key in the key-seats of the slips and rod and playing in the keyway 7 of said extension and upheld by the spring-supported rod 11 to hold the slips against the shoulders 8.

The sockets or key-seats 16 are somewhat larger than the key 17 to permit the slips 15 to partake of a tilting action, the key 17 thus forming a portion on the rod 11, on which the tilt slips or bits 15 are loosely swung or pivoted, adapting their lower ends to tilt or swing in toward the center of the stock or mandrel portion to pass through the well-casing or to tilt away from the center to assume the proper position for reaming. The tilt-slips are provided with shoulders, 18, adapted to slide upon a spreading portion provided in connection with the mandrel-body. Said slips are furnished with inward projections 18 to slide upon the downward extension 6 of the mandrel to spread apart the cutting edges 19 of the slips when the slips are drawn up. The slips 15 are slidingly mounted on opposite sides of the downwardly-extending portion of the mandrel, and the key-seats 16 thereof are on the inner faces of the slips, respectively, and are practically closed at their outer ends, thus to exclude any mud or other foreign materials when the underreamer is in operation.

20 designates small holes in the slips, respectively, to allow a punch 21 to be inserted for adjusting the key in the operation of applying or taking off the slips. The key is preferably a notched key, being provided in

734,833

its lower edge with a notch 22, so that when the key is in place in its seat 12 the walls of the notch will engage the rod 11, thus to guard against displacement of the key from the position shown in Figs. I and III. The spring 10 affords yielding means for constantly holding the rod 11 up in the notch 22 and to hold the slips 15 against the shoulders 8, the parts of the underreamer being constructed to allow the key to be inserted through the rod 11 into the key-seat of a slip only when the slips and rod are drawn down with the key-seat 12 of the rod flush with the bottom of the keyway 7 in the mandrel. For this purpose the tapering dovetail slipways 9 open laterally just above the plane of the lower end of the bottom of the keyway 7 in the extension to allow the key 17 to be inserted in the key-seats 12 and 20 only when said seats are flush with the lower end of the keyway 7 and the slip drawn out as far sideways as it can be drawn, as shown in Fig. IX.

To assemble the parts of the underreamer in the first instance, the hollow body 1 being unscrewed from the joint member 2, the spring 10 will be inserted into the chamber 23 of the mandrel to rest on the shoulder 5 therein, and the slip-carrying rod 11 will be inserted into place and the washer 14 and nut 13 adjusted, as shown in Fig. I. The nut is preferably held from unscrewing by means of a cotter-pin 24 passed through the rod 11 after the nut has been screwed home. The rod is then forced or pulled downward by any suitable means into the position shown in Fig. IX, thus bringing the bottom of the key-seat 12 flush with the bottom of the slot 7 in the extension 6 of the mandrel. Then one of the slips is applied in position, with its key seat 16 ready to receive the key 17, when the same is inserted through the key-seat 12 and the slot 7. Then the key is inserted and is passed through the key-seat of the rod sufficiently far to allow the other slip to be brought into position, so that the key may be pushed back into the key-seat of said other slip. Then a suitable instrument, such as the punch 21, will be inserted through the hole 20 and the key will be pushed back into the key seat of the slip last applied, whereupon the notch 22 will be brought into position to receive the lower wall of the key-seat 12. Then the rod 11 is released, thus allowing the yielding means 10 to draw the rod up into the mandrel, thus bringing the slips 15 up against the shoulders 8 and the inward projections 18 against the sides of the downward extension 6, thereby spreading apart the lower ends of the slips.

The face 25 of the lower end of the downward extension 6 of the mandrel is upwardly sloping at its edges and the upper faces 26 of the extensions are downwardly sloping, so that when the slips are drawn upward they are readily forced outward by the sliding contact of the sloping faces 25 and 26.

By the construction shown wherein the hollow mandrel is provided at its upper end with

a pin screwed into the lower end of the joint member 2 great strength of the hollow mandrel is insured.

In Fig. I, *b* designates the well-casing and *c* the usual shoe at the bottom of such casing.

In order to conveniently remove and reapply the slips for the purpose of sharpening or for any other purpose, the lower end of the rod 11 is furnished with a screw-threaded socket 27, and means for drawing down the rod against the pressure of the spring 10 are temporarily screwed into the socket to enable the operator to bring the rod 11 into position to allow the slips to be removed and replaced without unscrewing the body of the mandrel from the joint member.

The eyebolt 28 (shown in Fig. IX) indicates a form of such means.

To remove the slips, the rod will be drawn down into the position shown in Fig. IX, thus bringing the key against the lower end of the keyway 7 in the extension 6 and allowing the rod to be drawn out of engagement with the notched edge of the key 17, whereupon a suitable instrument, such as the punch 21, will be inserted into the hole 20 and the key driven into the position substantially shown in Fig. IX, thus releasing one of the slips, whereupon the punch 21 will be inserted into the hole 20 in the other slip and the key will be driven out of the key-seat 16 in said other slip, thereby releasing the other slip.

To replace the slips, the operation just described will be reversed.

When the slips have been replaced, the rod will be released and the eyebolt unscrewed and the apparatus is ready for use.

29 designates the dovetail flanges of the slips to play in the ways 9.

To introduce the underreamer into the well-casing, the slips will be tilted and drawn down into the position shown in Fig. III, thus bringing the projections 18 below the extension 6, whereupon the edges 19 are brought toward each other sufficiently to allow the tool to pass down through the casing, and when the slips escape below the shoe *c* the spring 10 draws up the rod 11, which tilts the slips into cutting position, as indicated in Fig. I. When the tool is drawn upward, the slips coming into contact with the shoe will be tilted and pressed into the position shown in Fig. III and will readily pass out through the casing.

The rounded end 25 of the extension 6 when pressed against the abrupt projections 18 causes a quick tilting of the slips to throw their cutting edges outwardly, and the slips are thus brought into position with a comparatively slight longitudinal movement.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. An underreamer comprising a hollow mandrel furnished with an internal shoulder, a downward extension having opposite parallel bearing-faces having a keyway therein, shoulders at the sides of such extension, and upwardly and inwardly sloping dovetail slip-

ways beneath said shoulders; a spring on the shoulder in the hollow mandrel; a rod playing in the mandrel furnished with a key-seat and supported by the spring; dovetail tilt-slips playing in the slipways and furnished with key-seats respectively; a key in the key-seats of the slips and rod and playing in the keyway of said extension to hold the slips against the shoulders; said slips being furnished with inward projections to slide upon the downward extension of the mandrel to spread apart the cutting edges of the slips when the slips are drawn up.

2. An underreamer furnished with a mandrel having a downward extension provided with opposite parallel bearing-faces and a keyway in the extension; a spring-supported rod furnished with a key-seat and playing up and down in the mandrel; tilt-slips slidably connected with the mandrel and furnished with inward projections to slide upon the opposite bearing-faces of the downward extension to spread the slips apart at the lower ends when the slips are drawn up; and a key carried by the rod and carrying the slips.

3. In an underreamer, the combination of a mandrel; slips slidably mounted on opposite sides of a portion of said mandrel and furnished on their inner faces respectively with key-seats, said key-seats being somewhat larger than the key on the operating-rod; a yieldingly-supported rod playing lengthwise of the mandrel and furnished with a key-seat; and a notched key in the key-seats of the rod and slips, a portion of said rod taking into the notch of said key.

4. A mandrel furnished with shoulders and a slotted extension beyond said shoulders and with dovetail ways on opposite sides of said extension; dovetail tilt-slips for said ways furnished on their inner faces respectively with key-seats; a rod sliding in said mandrel and furnished with a key-seat; a notched key in the key-seats of the slips and rod; a portion of said rod taking into the notch of said key, and yielding means to draw the rod up; the parts being constructed to allow the key to be inserted through the rod into the key-seat of a slip only when the slip and rod are drawn down with the key-seats thereof flush with the bottom of the keyway in the mandrel.

5. In an underreamer, dovetail tilt-slips furnished with key-seats respectively on their inner faces; a rod furnished with a key-seat; a key for said key-seats; a mandrel in which the rod plays constructed with a slotted extension and tapering dovetail slipways which open laterally just above the lower end of the bottom of the slot in the extension, to allow the key to be inserted in the slot and key-seats only when the key-seats are flush with the lower end of the slot.

6. In an underreamer, a mandrel furnished with a hollow slotted extension, the lower end of which slopes upward at the edges; tilt-slips slidably connected with the mandrel and furnished on their inner faces with projections, the upper faces of which slope downward to slide upon the extension of the mandrel; and means connecting the slips with the rod.

7. In an underreamer, the combination with a hollow mandrel, provided with a slotted extension, a spring-actuated slip-operating rod provided with a pivot-key, tilt-slips provided with key-seats adapted to be engaged by said pivot-key, said key-seats being somewhat larger than the key to allow the slips to tilt, said slips provided with inwardly projecting shoulders, and said slotted extension provided with surfaces adapted to tilt said slips and hold the same in expanded position.

8. In an underreamer the combination of a hollow mandrel with a hollow slotted extension, said extension having opposite parallel bearing-faces, a slip-carrying rod in said mandrel, slips connected to said rod, said slips having projections which bear against said extension, said slips being provided with key-seats, a key carried by said rod, each end of the key lying in a key-seat of a slip, and the key-seat in each slip being somewhat larger than the key to allow the slips to partake of a tilting action.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Santa Paula, in the county of Ventura and State of California, this 19th day of October, 1901.

EDWARD DOUBLE.

Witnesses:

WALTER WEEKLEY,
W. F. DINGER.

[Endorsed]: No. 2918. United States Circuit Court of Appeals for the Ninth Circuit. Union Tool Company vs. Wilson. Stipulation Re Defendant's Exhibit Bole Patent and Defendant's Double Patent No. 1, etc. Filed Apr. 27, 1917. F. D. Monckton, Clerk.

